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MAN

A REVELATION OF GOD.

BY

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NEW YORK: PHILLIPS & HUNT.
CINCINNATI: CRANSTON & STOWE.
1888.

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TO HER

WHO HAS BEEN

MY GREATEST EARTHLY JOY

DURING THE NINE YEARS OF PREPARATION FOR THIS VOLUME,
THE WORK IS

MOST AFFECTIONATELY DEDICATED

BY

THE AUTHOR.

PREFACE.

THE following pages were written with the earnest desire to help the honest doubter over his difficulties. The writer is of a skeptical bent of mind, and was troubled with mental unrest even after his conversion; and when, in his younger student days, study brought him for the first time into contact with various systems of mental philosophy and various phases of ethics, he drifted for a time like a ship without rudder or compass on the dark and horrid sea of Doubt.

But after the agony of the drifting, and the horror of darkness worse than Egyptian, came the grappling of anchor "sure and steadfast," the solidification of faith, and the peace that accompanies conscious assurance. Because of this long mental fluctuation he has always had sympathy for men of skeptical mind, and this volume is sent forth in hope that by its perusal many young people especially—and perhaps many older men and women, who are not familiar with the language of the schools—may be helped off, or *kept* off, the shoals of unbelief.

With this end in view the use of technical terms

has been, so far as possible, avoided. Writers, like preachers, too often forget the multitude for whose benefit they should write, and direct their thought exclusively toward the learned minority whose applause they covet. The present writer does not profess insensibility to commendation from profound thinkers, but has constantly held uppermost in his thought the average thinker, and has honestly endeavored to write for him.

During nine busy years all the time which could be spared from daily toil, as pastor and teacher, has been given to preparation for what is now somewhat reluctantly sent forth into the great world of books. It appears to the author to be a very small result of so many years of labor, and may appear more insignificant to the critic. But the writer has never yet apologized for undertaking a plain duty, and what he has written he has written because he could not avoid writing it.

He has sought impartially to give authorities on both sides of every question; and, at the risk of seeming to quote too largely from others, has endeavored to give enough of the exact words of each author cited to do him, as well as the subject, justice. Names and titles have been given in full, either in the text or in foot-note.

I acknowledge with gratitude the uniform courtesy of the librarians of the North-western University, the Presbyterian College of Montreal, the

McGill University, and the Buffalo Library; and also of the owners of several valuable private libraries, who have spared no pains to lighten my task. With a sense of inexpressible gratitude to God, a full and satisfying revelation of whom, during all these years, the author of *Man a Revelation of God* has constantly found, he closes this Preface—"done before," yet always written last—and commends his book to the Master in whose service it is sent forth.

GEORGE EVERETT ACKERMAN.

THE MANSE, 448 ELK STREET, BUFFALO, N. Y.,
January, 1888.

"The pulse of religion is thus quickened by every law or new illustration of law, by every fact and legitimate use which is made of the fact, in science. While science discovers, and classifies, and names, religion looks on without fear; for reason, which gives to science its meaning, gives to religion a shield."—*Rev. R. Mitchell, in Transactions of the Victoria Institute.*

"For the Lord giveth wisdom: out of his mouth cometh knowledge and understanding."—*Solomon.*

"What is mystery to so many men, what feeds their worship and at the same time spoils it, is that area round all great truth which is really capable of illustration, and into which every earnest mind is permitted and commanded to go with a light."—*Drummond.*

INTRODUCTION.

THE symbol of the nineteenth century is the interrogation point. We live in an age of inquiry. The desire to look into the unknown is as universal as the race. The savage, who gazes on the expanse of waters encircling his island home, wondering what lies beyond, and sinks in the terror of superstition before the phenomena of nature; the astronomer, who with unflagging zeal watches out the night to detect some celestial wanderer; the chemist, bending intently over his crucible, or watching for some delicate reaction; the geologist, patiently striving to decipher the records of the rocks—all are moved by a common impulse: a desire to lift the veil which hides from view the unknown. It is this which has given us all the modern appliances in art, and has placed physical science so proudly before the world. It is this which to-day impels us to do higher honor to the patient investigator of scientific phenomena than to the greatest warrior or statesman, and causes a nation's most lasting fame to come, not from political achievements, but from the possession of some master-mind in science.

All true science is one. The thought of the present

is largely occupied with physical science, but fields of equal fruitfulness are found within. *On* the human mind from the earliest ages has been enstamped the image of the Divine; *in* it have been placed the germs of truth; and a large share of the world's thought has been given to the study of individual man and his relations to the Infinite. In this study progress has been tardy. Mighty and permanent changes are always slowly made. Historians count not the men who fail in great enterprises; they tell not of buried hopes. Only those who stand at the crises of events have their names sent down to posterity. Revolutions which seem at first thought to have been the result of a single man's planning and a single nation's executing, examined more closely, are found to have been the growth of centuries and the property of all nations. Men find a peculiar pleasure in the historic study of struggles for civic freedom, and rightly so; for they were all of value and possess true dignity. But far above all others would I place *the struggles of thought to burst its fetters;* and I ask the reader's attention for a few moments in these introductory pages to a brief glance at some of these struggles.

The historian tells us that there are only two great eras in the history of mental science. This is true, and these eras were separated by twenty centuries; nevertheless, no one of these intervening centuries was without its searchers after truth, its representa-

tive minds, peering through the darkness. There may have been but little accomplished in all that time of a purely philosophical character, but much was done toward the emancipation of mind, toward preparing the world for the advent of those master-souls of the seventeenth century, Bacon and Descartes, who gave a new impulse to philosophical study, striking boldly out into paths hitherto untrodden, and inviting all men to examine for themselves.

The former did little with pure philosophy, as such, but who can measure the influence he exerted upon its methods? It is because Bacon lived and questioned the old methods, because he denied the absolute power of logic and protested against the lack of observation, that so many eager inquirers have ever since been patiently interrogating Nature, and in a thousand ways seeking to elicit answers to the problems which constantly force themselves upon us. Even hostile critics are compelled to acknowledge the worth of his labors, but they tell us that he led the thinking world far into sensationalism; as if that bore down and blackened this noble spirit of sound wisdom which labored so earnestly to remove obstructions and go on to ultimate truth. We grant that to some extent these criticisms are just. The theories of Hobbes, both political and moral, which, as Hallam says, "sear up the heart and take away the sense of wrong," were the outgrowth of the inductive philosopher's method; nevertheless, his great heart beat responsive to

truth, and for its advancement his life was given. Then, too, perhaps we owe the Essay on the Human Understanding to the impulse given by this great man to free inquiry. As one opens the immortal work of John Locke he is at once impressed with its quaint vigor and rugged boldness. He had a plan of his own, based all upon the phenomena of mind, and, pushing fearlessly out, gave to the world a treatise which influenced thought beyond all calculation; influenced it for evil to a great extent in calling into the field such works as those of Priestley in England, and Condillac in France, and helping to build up a system which finally went a long way toward degrading morality and dethroning God, unsettling governments and breeding pestilential social vagaries. But who will presume to strike the balance in the long account?

To Descartes we owe even more than to Bacon. He it was who, with vigorous mental independence, built up an ideal philosophy, the fundamental principles of which have not yet suffered removal. But, as is the fate of many a leading mind, he undertook, by a single general method, to solve all problems, and led his followers into pure objective idealism, as may be seen in the works of Spinoza. But the writings of Descartes more than atoned for all this in bringing out such men as Butler and Clarke, to do valiant service in the armies of truth.

It was upon German soil, however, that Idealism

had its most vigorous growth. Here its foremost representative was Leibnitz, a man of profound mind and great learning, who devoted himself with unflagging zeal and broad liberality to the analysis of the systems of Descartes and Locke and the advancement of philosophical culture. There seemed something almost divine in the masterful grasp with which the great geometer's giant intellect held a subject and analyzed it.

Idealism in more modern times has given to the world such men as Stuart, Mackintosh, and Hamilton in Scotland; as Fichte, Hegel, and Schelling in Germany, who, with their great leader, Immanuel Kant, have won for their country immortal fame as the land of ideal philosophy. While Sensationalism has furnished Mill, Lewes, and Bentham in England; Tracy, Volney, and Comte in France—men who have made for themselves great popularity, but some of whom have pursued a cherished theory far into the maze of unreason and folly.

I know it is the fashion in some circles to shrink with a sort of holy horror from whatever looks like unfaithfulness to the old creeds, and to cast out with ignominy the names of all skeptical leaders. But, with all my love for the generally accepted doctrines of our holy Christianity, I regard as of profound interest the study of the growth and influence of rationalism in all its forms; and instead of shrinking in disgust and dread from such men as Rousseau, Mill, Huxley, and

Spencer, I welcome them as in God's providence doing a work which needs to be accomplished in the onward march of Christian civilization. There are heaven-born questions as well as earth-born doubts. It is only the failure to distinguish between the two that produces trouble.

There are two classes of people, and only two, who would have us believe that there exists a deadly conflict between Christianity and science. The one is composed of those enthusiasts in religion who have made but the slightest advance in scientific or theological inquiry, and yet absurdly assume that they are set to guard the sacred portals against the inroads of what to them seems godless science; the other consists of men who, with shallow brains, but apt speech, have succeeded in catching the public ear, and are making a mock of both religion and science in the name of "liberality." Both are enemies to mankind; the former because they claim to possess the whole of truth (and it is this spirit which in all history has given rise to persecution); the latter because they are hypocrites of the deepest dye. Professing to be lovers of truth, these men are merely lovers of self; professing to be reasoners, they are only scoffers; professing to have personally discovered the facts, they take every thing at "second-hand," and at the best can offer nothing but negations. They have not the faintest resemblance to the genuine searcher after truth.

The conflict in which we are now engaged was inevitable; and why may we not rejoice in it, if it but strike off the fetters which stifle conscience and defraud it of its freedom, and give us a religion strong in the strength of its own inherent virtue? From the remotest corners of creation, and from the recesses of man's own soul, are being brought the rich results of persevering search. No longer chained, the human mind hesitates not to venture the boldest inquiries. Girded with the power of an all-conquering faith in the harmony between nature and nature's God, lovers of truth, rather than lovers of antiquity and self, are at work—some on the old-time field of Europe, some in our own land; and it matters not what *name* the world gives them, in what *school* it places them, with how much of suspicion it regards them, how bitterly they are hated or maligned—such workers are the need of the times, such thinkers are helping to banish intolerance from the world, and crush out the spirit of tyranny. They are helping to emancipate conscience, and enthrone Christ in every heart. They are spreading broadcast among the people principles all athrob with vitality, individuality, and immortality.

What though some tares are sown and spring rankly up! The Lord of the harvest will attend to these. More and more strong has become my belief, during these last years, in a sort of divine conservation of truth. God permits blatant infidelity to blow

the fires of his own furnaces, until, the crudities all burned out of man and system, only the genuine metal remains.

As it is within the power of God to cause the wrath of man to praise him, so is it within his power to cause the opposition of skeptics to assist in strengthening the bulwarks of Christian faith, and in broadening the foundations of Theism. This power he is constantly displaying in every department of science, in a manner full of most cheering promise. TRUTH IS ONE. THE SEARCH IS ONE. THE SEARCHERS SHALL YET SEE "EYE TO EYE."

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"So God created man in his own image, in the image of God created he him; male and female created he them."—*Moses.*

"Life may be a mystery, but most certainly it is not a mechanism. New consequents demand new antecedents, and life cannot spring from death without the intervention of a Power which is itself alive."—*Sexton.*

"All really scientific experience tells us that life can be produced from a living antecedent only."—*The Unseen Universe.*

"We are in the presence of the one incommunicable gulf—the gulf of all gulfs—that gulf which Mr. Huxley's protoplasm is as powerless to efface as any other material expedient that has ever been suggested since the eyes of man first looked into it—the mighty gulf between death and life."—*Sterling.*

"I am the Way, the Truth, and the Life."—*Christ.*

Man a Revelation of God.

CHAPTER I.

IN HIS ORIGIN.

SECTION FIRST.

Man is the highest in order of earthly existences, and the study of man must ever be of chief importance. Problems pertaining to man's origin and destiny are intrinsically difficult to solve. This difficulty stimulates inquiry. Vigorous minds love rugged questions. Our present inquiry has of late been lifted out of the domain of metaphysics into that of physics. In place of the dialectics of the logician, we are called upon to examine the reactions of the chemist. Instead of the wordy discussions of scholastics, we have the hypotheses of naturalists, often equally wordy. All this is well. Progress is pleasing and profitable. Truth is its own vindicator. Failures teach men wisdom, and at least *tend* to teach them modesty. Reliance upon material science may yet bring the proud arrogance of the world to reliance upon a Supreme Creator and Upholder of

the material universe. Looking outside ourselves for the sure evidence, and finding it not, we may be led to a closer look within.

Man reveals God in many ways. The purpose of this chapter is to show that he reveals him in his origin.

We assume that man has a physical existence. With those who deny this, and claim that *being* is only *seeming;* that there are no entities, but simply concepts; that shadows we are, from shadows we came, and with the universal shadow we must eventually commingle — with such philosophers we have no controversy. Assuming, then, the existence of man as a physical being, upon a physical earth, surrounded by a material universe, our inquiry is simply, How did he get here?

Various answers have been given. Upon these answers depends the answer to a question even more momentous—whether or not his getting here reveals a Supernatural Power. If the answers given by those who refuse to acknowledge a personal Creator can be shown to be inadequate to account for the result, unsatisfactory to reason, and out of harmony with facts, much troublesome trash which has hitherto obscured the vision of multitudes will be swept away. If, in addition to this negative evidence, we find that the answer given in the Book purporting to be a divine revelation is in perfect harmony with all ascertained facts as taught by the most advanced science, and fully adequate to account for the result,

we shall be obliged, as reasonable beings, to accept it as satisfactory, and to frankly acknowledge the revelation of God in man's origin.

First, then, as to the naturalistic answers which have been given.

They are not numerous, but have taken on many different phases, and brought forth a multitude of hypotheses, defended in a mass of treatises, good, bad, and indifferent, a tenth part of which it is impossible for any but professional students to examine. A few, however, will fairly represent the whole.

SPONTANEOUS GENERATION.

Spontaneous generation is one of the oldest of the old theories of materialistic science. Many who profess thorough acquaintance with science seem to regard it as a *new* theory. But this is only an instance of a common error. Men with meager attainments in science or literature often assume to possess large knowledge. We should naturally expect the masses in an unscientific age to believe in spontaneous generation. During the long summer days every stagnant pool and road-side ditch brings forth its myriads before their eyes without any visible ancestry. The old barrel that was empty till the last shower, a few weeks ago, and into which only pure rain-water fell, is now teeming with life. The bottle in which was placed only water, and which has stood upon the shelf closely stoppered

for a month, is found to contain unmistakable evidences of organized structure. The natural inference is—spontaneous generation; and any one who will be at the pains to examine literature and history will find that far back in mediæval times, and down to as late as the seventeenth century, almost every body believed in it.

The spirit of investigation which arose under Bacon and Descartes set men to experimenting, and they soon found that spontaneous generation was a myth; that in the water supposed to be pure there were multitudes of life-germs, which needed only the genial warmth of the sunlight and the quiet of stagnation to develop into full animal existences; that even in the air we breathe there exist innumerable germs awaiting favoring conditions to throb into life. Experiments made by Redi, the great naturalist of Italy, in 1668—of special interest because they were, perhaps, the earliest in this field—showed, beyond reasonable question, that all forms of animal life which have been supposed to originate without ancestry were really hatched from germs previously deposited. It remained for the "advanced science" of the present century to revive this dead theory, and bring it out in support of evolution. It was arrayed in beauty by Hæckel, Huxley, and Bastian, and for a decade made a great stir in scientific circles. Hæckel, in his *History of Creation*, says: "A truly natural and consistent view of organisms can assume

no supernatural act of creation for even those simplest original forms, but only a coming into existence by spontaneous generation." Mr. Huxley makes an equally unequivocal avowal of his belief in the origin of life without antecedent life when he says: "If it were given me to look beyond the abyss of recorded time, I should expect to be a witness of the evolution of living protoplasm from not-living matter." And Mr. Tyndall professes to see the "promise and potency of all terrestrial life in matter," although he has since squarely and strongly repudiated the theory.

In his great work, *The Evolution of Man*, published in 1879, in two volumes of five hundred pages each, Hæckel renews his championship of this theory. In the opening of his preface he boldly shows his spleen against Christianity and the Bible, and closes the argument with the following precious bit of information:

"Anthropogeny has led us to the conclusion that even in the entire history of the evolution of man, in the history of the germ as well as in that of the tribe, no other active forces have been at work than in the rest of organic and inorganic nature. All the forces at work there can be reduced at last to *growth* —to that fundamental function of evolution by which the forms of inorganic as well as of organic bodies originate. Growth, again, itself rests on the attraction and repulsion of like and unlike particles. It has

given rise to man and to ape, to palm and to alga, to crystal and water. Hence the evolution of man has taken place according to the same 'eternal, immutable laws' as has the evolution of any other natural body. The spirit and mind of man are but forces which are inseparably connected with the material substance of our bodies." * All of which, it will be readily seen, is mere assumption.

His whole argument is lacking in continuity. As a specimen of his reasoning we may take the following. After entering into a long disquisition upon "cytulæ" and "cytococci," "nucleoli" and "monerculæ," terms invented to impress the unsophisticated or "priestly" reader, he says: "We regard it as a fact of the greatest interest that the human child, like that of every other animal, is, in the first stage of its individual existence, a nonnucleated ball of protoplasm, a true cytod, a homogeneous, structureless body, without different constituent parts." † But he has nowhere offered any data to prove his so-called "interesting fact," and his "regarding" it as such is simply "begging the question."

H. Charlton Bastian, M.D., in a ponderous treatise of a thousand pages, entitled *The Beginnings of Life*, takes the strongest ground for spontaneous generation, or, as he delights to term it, archebiosis. He says: "The possibility of spontaneous generation must be considered to turn almost wholly upon the possi-

* *The Evolution of Man*, vol. ii, p. 457. † *Ibid.*, vol. i, p. 179.

bility of the *de novo* origin of bacteria. Evidence which is of the most convincing character, when looked at from all sides, now shows that bacteria are killed by a temperature of 140° F., yet similar organisms will constantly appear and rapidly multiply within closed flasks containing organic fluids, although the flasks and their contents have been previously exposed for some time to a temperature of 212° F." *

But, as a matter of fact, this establishes nothing, for the conditions of an accurate experiment have in none of his elaborately instanced cases been fully met. M. Pasteur long ago proved them utterly invalid, one and all. Nor was he alone in the work of refuting the claims of spontaneous generation. Mungo Ponton, F.R.S.E., after giving in detail the experiments of Bastian and others, concludes a learned and able argument with these words: "It will be perceived that all the experiments fall far short of proving living organisms to have been produced by the combination of purely inorganic materials aided by the stimulus of light, heat, and electricity." †

But so arrogant are the claims which skepticism still bases upon this refuted theory, that I am constrained to give some account of the experiments which were made by the foremost men of science from 1870 to 1877. A summary by Professor Cal-

* *The Beginnings of Life*, vol. i, p. 6.

† *The Beginning: Its When and Its How*, p. 170.

derwood affords as full a view as is possible in brief space. He says:

"A considerable number of investigators began to turn their attention to the subject, and a period of seven years was occupied before the results became so certain as to be practically final. Pasteur, Pouchet, and Joubret were at work in France; Crooks, Child, Beale, Roberts, Bastian, Tyndall, and others in England. All experiments concentrated upon certainty in sterilizing the substance operated upon. Pasteur pointed out that the chemical properties of the infusion affected the vitality of the microscopic germs inclosed in it; and Roberts at a later stage confirmed this by independent investigation, proving that slightly alkaline liquids are more difficult to sterilize by heat than slightly acid liquids. In this way it was shown that distinct records of temperature were needful, greater intensity of heat being required in some cases than in others in order to secure destruction of germs. The facts were illustrated by hay infusion; the acid infusion invariably remaining barren after a few minutes boiling, and the neutralized infusion invariably becoming fertile after a similar boiling.

"The neutralizing element was liquor potassæ, and the next question started was this: Did the liquor potassæ enable the germs to live longer under the boiling process, or did its infusion operate so as to originate life where germs no longer had any existence? A contrivance was adopted by which the boil-

ing could be applied to the hay infusion while the liquor potassæ was kept inclosed in another part of the tube, ready to be added without exposure to the air after the boiling process was over. When added in this way the liquor potassæ had not any power to excite germination; the expectation that a certain mixture of acid and alkali would originate life was disappointed; all the earlier experiments were discredited. Still some clung to their expressed belief, for there is a prejudice of advanced thought as there is a prejudice of old beliefs. Tenacity of avowed opinion, with strong love of research, prolonged the inquiry and led to more decided evidence.

"The controversy was conducted by Dr. Roberts against Dr. Bastian, while all the experiments of Professor Tyndall were converging upon the same conclusions as those reached by Roberts. That Bastian had obtained bacteria after boiling admitted of no doubt, and he naturally clung to this fact as encouraging; others regarded it as only misleading. Bastian maintained that the alkali had a positive power of originating life, and stated 122° F. as favorable to the appearance of life. Roberts took ten examples of sterilized urine, and twenty-nine examples of fermentable liquids which had remained over from the earlier experiments of 1873–74, and these thirty-nine examples were subjected to careful experiment and observation. In the first ten cases the tube was heated in oil for fifteen minutes up to 280° F. The ten tubes

were then set in a warm place (from 70° to 80° F.) for a fortnight; the contents were transparent; the alkali was then allowed to mingle with it, and the tubes were placed in an incubator kept at a temperature of 115° F.; at the end of two days there was a sediment, and the liquor was clear; the tubes were replaced in the incubator, the temperature being raised to 122° F., as recommended by Dr. Bastian; there they continued for three days; they were then withdrawn and placed under the microscope, but no trace of living organism was found either in the fluid or in the deposit under it. The twenty-nine cases, including a variety of vegetable and animal preparations, were next treated in like manner, and with like results. Tyndall's experiments were reported to the Royal Society of London at the same time, with exactly the same result. M. Pasteur had previously reported to the Academy of Sciences in Paris to the same effect. It was thus proved by a mass of evidence that, if proper precautions were taken to destroy germinal forms, no mixture of alkali with acid, whatever the variety of materials selected, was adequate to produce life." *

The same searching experiments were continued in all directions for several years thereafter, with the same outcome from every quarter. Microscopes of the highest magnifying power ever constructed were used in carefully watching the development of the

* Henry Calderwood, LL.D., *Science and Religion*, p. 52.

smallest germs, and no one found a genuine case of spontaneous generation. Thus the matter stands at the present writing, and there need be no fear that this once popular hypothesis of unbelief will ever be proven true.

NATURAL SELECTION.

Another pretentious theory endeavors to account for man's origin without the immediate creative agency of supernatural power, by natural selection, or survival of the fittest. These terms have come into common use since the publication of Darwin's *Origin of Species* in 1859.

The theory of man's descent from some lower order of animals did not, however, originate with Darwin. But he brought to its elucidation such a wealth of learning, such an array of facts in Natural History, and, withal, such a serious spirit of candid inquiry, that the old theory seemed genuinely new, and the majority of his readers have doubtless regarded Charles Darwin as the originator of what is vulgarly assumed to be the "theory of man's descent from the monkey." The publication of his book was opportune, and his title a taking one.

The critical spirit was abroad. Old faiths were being rigidly re-examined. The Bible was assailed with bitter hostility. Physical science, by reason of surprising advances, had become arrogant, and confident of new triumphs. The times were ripe, and

within a few months after the publication of *The Origin of Species* "evolution" was the most popular term in science, and Charles Darwin the most popular scientist, notwithstanding his humble origin. Naturally enough, many of his disciples soon got far beyond their master. Hypotheses were set up which Darwin never intended, and which he persistently repudiated. Exponents were many; some of them were able and clear, and do justice to Mr. Darwin by placing his theory before the world in its best aspects, separated from the immense mass of cumbersome details with which he had been compelled to surround it. Perhaps no fuller, or more just, understanding of his doctrine of derivation of species can anywhere be obtained in brief compass than in the summarization of his fundamental principles or laws by Alfred Russell Wallace, who, in a work of rare merit, entitled *Natural Selection*, published in 1871, has done about all that learning and genius can possibly do to make the theory of natural selection stand alone. As given by Dawson, these so-called laws are as follows:

"First, the law of multiplication of animals in geometrical proportion. By this, any animal, if unchecked, would soon fill the world with its progeny. The checks are supplied by the destruction of germs and of adults by enemies; by limitation of geographical range; by limitation to particular kinds of food, and by other causes.

"Second, the law of limited population, whereby the habitable area afforded by the earth has always been stocked with inhabitants; so that the introduction of any new form of life must involve the extinction of others, and the spread of any one beyond its former limits must involve the limitation of others, while the germs produced by every kind of animal and plant must, in the great majority of cases, fail to find space for their development. Hence is supposed to arise a constant 'struggle for existence.'

"Third, the law of heredity, by which the progeny of all animals resemble their parents in all essential points though differing in individual details, and whereby also individual peculiarities acquired by the parent may be transmitted to its offspring.

"Fourth, the law of derivation, by which such differences, under the influence of external conditions, accumulate until they give rise to distinct variations in form, or to races, as we observe to be the case in so marked a way in our domesticated animals, but not to so great an extent in wild animals. This is one reason why we can domesticate some species and not others.

"Fifth, the law of change of physical conditions, whereby certain areas of the surface of the earth become different at one time from what they were at another, in the conditions necessary to life. Thus, we know that in the miocene tertiary period the climate of Greenland and Spitzbergen was so mild that

plants like those of the Middle States could flourish in those now inhospitable regions. On the other hand, in the post-pliocene time an Arctic climate extended further south than at present, over our continents and seas. We know also that nearly all parts of our continents have been many times submerged for long periods, and re-elevated to a higher position than now.

"Sixth, the law of the equilibrium of nature, whereby individual varieties and species well adapted to their environment flourish, while those less perfectly adapted decay; and, as, according to the previous laws, the conditions are constantly changing, the struggle for existence constantly goes on, and the animals being liable to vary, and perpetuate varieties, there must of necessity be a gradual change in the animal population of the earth. That is, those which change so as to become suitable to the changed conditions live, and those which become unsuitable die."

This admirably clear statement by Mr. Dawson makes the theory plausible. Look beneath the surface, however, and *substance* is wanting. Certain very patent facts are presented in well-chosen language. But, closely examined, they will not be found to furnish support to the hypothesis of evolution of species by natural selection, or the origin of man from lower orders of animal existence. Why? Simply because in all this change and progress by reason of favorable conditions, changes of environment, etc.,

there is no account given of how the conditions and environment were brought about; and we are left quite as much dependent upon a Creator of conditions as we should be, without this theory, upon a Creator of species. Dr. Hutchinson Sterling has well and tersely said: "Mr. Darwin has simply shown, but with an amazing wealth of illustration and an amazing love of hypothesis, what we have known all along, that life is dependent on conditions, to which conditions it is also pliable; but he has not traced life *to* conditions—he has not shown any origin of life *from* conditions, with consequent ultimate development into the organized world as it now exists."

Concerning the very problem at issue, neither the great leader nor any of his host of followers furnishes any satisfactory information. It is as far from solution as before, notwithstanding the erudition displayed in its handling and the elaborate treatises published for its unfolding. Darwin himself virtually confesses failure near the close of his second volume of *The Descent of Man;* and, though not in the exact words, yet substantially, confesses that in the process of natural selection there is an unseen, all-controlling power which guides to a definite and purposed end. He refuses to spell it with three letters, and denies that he admits its existence, but admits it notwithstanding. His own words are: "The birth both of the species and of the individual are equally parts of the grand sequence of events which our minds refuse

to accept as the result of blind chance. The understanding revolts at such a conclusion, whether or not we are able to believe that every slight variation of structure, the union of each pair in marriage, the dissemination of each seed, and other such events, have all been ordained for some special purpose." *

This is about as clear a confession of faith in a supernatural Creator as we could expect from an avowed champion of naturalism. This spirit seems to pervade much of his work. It is seen in that remarkable product of painstaking genius entitled *The Variation of Animals and Plants Under Domestication*, published nine years after *The Descent of Man*, wherein he shows us in detail thousands of cases of interesting changes wrought, *apparently*, by natural selection, but manifestly under the guidance of an unseen power. And yet, with strange and unaccountable inconsistency, after admitting all this, as if hounded by some infidel spirit determined not to allow him to be called a theist, Mr. Darwin affirms that natural selection accounts for man and all the higher animals as developed from inferior creatures without supernatural intervention!

The folly of such assertions, the unreasonableness of all attempts to get rid of God by naturalistic theories, is well stated by Dr. Martineau in *Christianity and Modern Thought;* a work of genuine worth, and en-

* *The Descent of Man*, vol ii, p. 396.

tirely free from any uncalled-for thrusts at skeptical science. He says:

"Is it not, in truth, a strange choice to set up 'evolution,' of all things, as the negation of *purpose* predisposing what is to come? For what does the word mean, and whence is it borrowed? It means to unfold from within, and it is taken from the history of the seed or embryo of living natures.

"And what is the seed but a casket of pre-arranged futurities, with its whole contents *prospective*, settled to be what they are by reference to ends still in the distance? Surely nothing can be evolved that is not first involved; and if there be any thing which not only carries a definite future in it, but has the whole *rationale* of its present constitution grounded in that future, it is the embryo, whence by a strange humor this denial of final causes has chosen to borrow its name. To take away the ideal basis of nature, and yet construe it by the analogy of organic growth, will be forever felt as a contradiction. It is to put out the eyes of the Past in order to show us with what secure precision, amid distracting paths and over chasms bridged by a hair, it selects its way into the Future." *

Not only has this pretentious hypothesis, from which so much was hoped by infidels and from which so much was feared by Christians, failed to satisfactorily account for man's origin, but it has failed to show even one clear case of the origination of a dis-

* *Christianity and Modern Thought*, p. 204.

tinct species. In recent years the chief efforts of naturalists have been devoted to bridging the chasms between species.

Again and again some one has claimed success, but invariably a little further research has shown it to be illusory, and at the present writing I am not aware that in a single instance an individual of one species has, by the most painstaking care, been developed or evolved until its progeny has become an individual of another species. The excuse for failure is now the same that it has been during all the controversy; namely, "lack of time;" and so there has been a constant and strenuous effort to push back the date of man's origin. This excuse possesses but little force, however, for, passing back through all the ages freely granted them by every Christian scientist, in the domain of life among lower animals, as shown in the records of geology, they succeed no better. There was a time when it was feared by some faint-hearted believers that geology, with its vast time, would reveal such passage of one species into another, and so unsettle faith in special creation. We do not grant that supernatural intervention would be explained away even if this were shown. It would only remove the great First-Cause a little farther back. Banish Him it certainly would not. But such has not been shown. On the contrary, it seems farther from it now than ten years, or even twenty years, ago. The most recent researches in the field of geology promise

no such revelation. I ask attention to the following statements of Sir William Dawson, whose ability every-where commands respect. He says:

"Palæontology might be expected to furnish in fossils connecting links between extinct and recent species. On the contrary, however, it shows a marvelous persistency of species through vast periods of geological time, and often under diverse varietal forms, passing into each other; but each species seems to come in without progenitors and to become extinct without descendants. . . . Indeed, as new species of fossils multiply, and new facts are ascertained as to the conditions of their introduction and disappearance, the gradually diminishing 'imperfection of the record' becomes less and less available for the purposes of the evolutionist. . . . The nearest approach to direct palæontological evidence is that which has been adduced by Huxley in England and Marsh in this country, as to the relations of the modern and tertiary horses to some similar animals, their predecessors in the middle and early tertiary periods. This shows, undoubtedly, the introduction at successive periods, between the beginning of the eocene tertiary and the modern, of animals more and more approximating to the modern horse. But none of these are known to pass into each other by varietal forms, and the supposition that they were produced by a passage from one to the other, even if this were granted as possible, requires, when striving to realize it, such

a complicated combination of changes in the animals themselves and in their surroundings that it becomes simply incredible, except on the supposition of intentional intervention.

"In so far, then, as either the origin of species or the origin of man is concerned, the Darwinian theory is not entitled to rank as a result of scientific induction. It rests merely on analogy, and on its power to explain easily a great variety of phenomena, provided its premises are granted. In this it contrasts, in a scientific point of view, unfavorably with the old idea of creative design, which undoubtedly rests on an inductive basis." *

The reader cannot fail to see the cogency of this reasoning. Still more forceful to the skeptical reader may appear the testimony of those who are not committed to Christianity.

In a paper read before the "Philosophical Society of Great Britain" by the celebrated Dr. Nicholson, of the Durham University College, this whole subject is most ably handled; and, although he evidently has a desire to find a solution of the mystery of life in evolution, he reaches the same conclusion that other candid investigators have reached; namely, "Upon the whole, we may conclude that palæontology, in its present stage of development, offers no strong support or is *directly opposed* to the special theory of the origin of species advocated by Mr. Darwin."

* *Nature and the Bible*, p. 142.

Even by those who would push man's antiquity far back beyond the time allowed by revelation, and so invalidate the Bible account, this theory is repudiated.

Louis Figuier, in a work entitled *Primitive Man*, takes strong ground for the great antiquity of the human race, and plainly indicates that he has no disposition to defend the Bible account of creation. Nevertheless he says, concerning the descent of man from the ape: "We strongly repudiate any doctrine of this kind. . . . Show me an ape who can make flint hatchets and arrowheads, who can light a fire and cook his food; who, in short, can act like an intelligent creature—then, and then only, I am ready to confess that I am nothing more than an orang-outang revised and corrected. Show me an ape who can speak, and then I will agree with you in recognizing it as a fact that man is nothing but an improved ape. In dealing with this question in a more general point of view we must add that the most enlightened science declares to us, in unmistakable accents, that species is immutable, and that no animal species can be derived from another." *

In another work of equal merit, entitled *The Human Race*, he fully establishes the same position.

M. de Quatrefages, an illustrious French naturalist, with an evident bias against Christianity and all super-

* *Primitive Man*, p. 30.

natural revelation, says: "With regard to the origin of man from the ape it is nothing but pure hypothesis, or, rather, nothing but a mere *jeu d'esprit* which every thing proves utterly baseless, and in favor of which no solid fact has as yet been appealed to. Science, therefore, which pretends to solidity of character must put this problem on one side. We really approach nearer to the truth when we confess our ignorance than when we attempt to disguise it either to ourselves or to others."

The illustrious Agassiz, writing upon this subject near the close of his life, and bringing to bear upon it his ripest wisdom, says: "Its doctrines contradict what the animal forms buried in the rocky strata of our earth tell us of their own introduction and succession on the surface of the globe."

If any further authority were needed to establish the unsatisfactoriness of this theory, we might turn to Professor Calderwood, of the University of Edinburgh, who, in his *Relations of Science and Religion*, published in 1880, gives a most discreet review of the whole problem, bringing out the strongest features of the theory, and showing them up at their best; but finally clearly proving that insurmountable difficulties stand in the way of its acceptance by true science.

But sufficient has already been produced. And in all this the reader will bear in mind that we have not been refuting evolution, as such, because we fear its

antagonism to Christianity. We have simply been showing its unsatisfactoriness as an answer to the question, How did we come to be? For, whatever may in the future be proven concerning the progressive changes in organized existences, the necessity for a supernatural Creator will remain the same.

There are other hypotheses which have been set up to solve the problem of man's origin, but they are equally unsatisfactory, and need not claim our attention.

I would not be understood as in any sense wishing to detract from the worth of the work which has been done by the great naturalists whose names have been mentioned, and whose theories have been found untenable. Truth is a grand unity. Facts are the basis on which the superstructure of truth must be reared. A vast mass of facts has been discovered by these men, and we are every one of us indebted to them for their patient toil. It is only with the faulty correlation of these facts, with the unwarranted generalizations from them, and with the entirely gratuitous additions of supposed data, that the careful man of science, the genuine lover of truth, has any controversy. For the facts we say, "All thanks;" for the fancy, "we will none of it."

I think the reader will agree with me that, the first

part of the proposition with which the chapter opened has been sustained; namely, that all the answers given to the question of man's origin by those who refuse to acknowledge an omnipotent personal Creator are not only unsatisfactory to reason, but out of harmony with facts, and wholly inadequate to account for the result. If so, he is prepared to enter upon the examination of the second part.

SECTION SECOND.

Is the answer given in the book which purports to be a divine revelation in perfect harmony with all ascertained facts, as shown by the most advanced science, regarding man's origin, and is it entirely adequate to account for the result? I say *ascertained* facts; not hypothecated ones, or mere appearances.

First, then, what is the answer of the book? Turning to Genesis we find it as follows: "And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. And God created man in his own image, in the image of God created he him; male and female created he them."

We are further informed by this record that man was made on the sixth creative day.

According to this answer he is the most recent of animal species, and, although we are nowhere in-

formed that his creation took place a definite number of years before Christ, yet the age of man is at least approximately given, and the record may justly be held responsible for its approximate correctness.

This opens at once the whole question of the antiquity of man. Failing to show any conflict between geology and Genesis as to the creation of the inorganic universe, and all forms of plant and lower animal life, deniers of the truth of revelation have devoted their best energies to an endeavor to prove a vast antiquity for man, and by so doing aim to invalidate the word, and with it the revelation of God in man's origin. Have they succeeded? Is the Bible account in harmony with ascertained facts?

A complete answer to this question, with a full citation of authorities, would occupy more space than can possibly be given thereto in this volume; but in brief space a sufficient veiw of the field can be easily given, to convince all candid inquirers that the accounts in the stony record, so far as they have been deciphered, correspond perfectly with the book.

Attention is first invited to a few of the elaborate attempts which geologists, or archæologists, have made, to show that the Bible is in error in regard to man's antiquity; for although in general the authors disclaim any such attempt, or even desire, yet the disclaimer fails to deceive any careful reader as to the manifest purpose.

In this inquiry we have nothing to do with the

question of the earth's antiquity, or the length of the Mosaic day. It is sufficient for the Christian scientist to know that the verdict of all geologists, worthy of the name, is in accord with the general *order* of the Bible account, and that no contradiction is any longer maintained; that, from having been supposed by many, fifty years ago, to be in direct hostility to Genesis, Geology now takes her place beside Genesis, and in unison of praise adores the same Author.

All our investigation has reference to very recent times, geologically speaking, although very ancient historically. Even those who contend for the remotest antiquity of man agree that he was a very late geological specimen.

Among these is Sir Charles Lyell, whose name has become almost a household word among students of geology. His *Principles* and *Elements* are too well known to need any statement here. As a geological treatise the former is an enduring monument and worthy of all praise. Not so *The Antiquity of Man.* In this he seems to lose his bearings somewhat; nevertheless, he finally virtually concedes that he does not *know* any thing about the date of man's appearance on the earth, except that, geologically speaking, it was *recent*—an admission as great as could be reasonably demanded of him.

We open the extensive work of Sir John Lubbock upon *Prehistoric Times*, and find in its perusal much of genuine worth, and indications of large research

in his chosen field. He records with great care the results of numerous examinations of fossil remains of animal life in various quarters of the earth's crust, together with the remains of human skeletons and implements, which have been found mingled with the bones of lower animals. He shows us a vast number of well-authenticated facts, and wins our admiration both for his learning, and his care to present the exact truth as found in the solid earth and in its unmistakable treasures. Thus he carries us with him back to the very border-land of ascertained truth, and by his candor of treatment secures a firm hold upon us for the inexact and unauthenticated data which he proceeds to make the basis of wide-reaching generalizations that have been unquestioningly accepted by subsequent writers on this subject. With bold and masterful stroke he proceeds to map out the prehistoric field as confidently as though he had been there at the time, and seen with his own eyes the habits and customs, the utensils and weapons, the rites and ceremonies, of those primeval cave and valley dwellers. Cosmic changes which other men scarcely venture to locate, even as to their order of sequence in the great world-progress, he not only locates but divides into definite periods or "epochs." Of these epochs he says there were four:

"1. That of the Drift, when man shared the possession of Europe with the mammoth, the cave-bear, the woolly-haired rhinoceros, and other ex-

tinct animals. This we may call the Paleolithic period.

"2. The later or Polished Stone Age; a period characterized by beautiful weapons and instruments made of flint and other kinds of stone. This we may call the Neolithic period.

"3. The Bronze Age, in which bronze was used for arms and cutting instruments of all kinds.

"4. The Iron Age, in which that metal had superseded bronze for arms, axes, knives, etc.; bronze, however, still being in common use for ornaments." *

Having thus mapped out prehistoric time according to his own liking, he proceeds to bring forth a wealth of facts and incidents, having reference to these epochs, which would seem to substantiate the whole, but which, on more careful examination, are found to be exceedingly uncertain, and wholly unworthy of being accepted as bearing upon the proof. This, however, has not deterred subsequent writers from basing their conclusions upon his premises and considering them absolutely proven.

Even a cursory glance through the volumes on anthropology and kindred subjects, which have been published since Sir John Lubbock gave to the world this treatise, reveals the fact that almost uniformly the writers accept him as authority; and, having quoted him or Sir Charles Lyell upon any point,

* *Prehistoric Times*, by Sir John Lubbock.

that point is considered settled beyond all farther controversy.

Even the *Encyclopædia Britannica*, which ought to be conservative and cautious on such ground, gives itself almost unreservedly to the upholding of these theories:

"Geology, notwithstanding the imperfection of its results, has made it manifest that our earth must have been the seat of vegetable and animal life for an immense period of time; while the first appearance of man, though comparatively recent, is positively so remote that an estimate between twenty and a hundred thousand years may fairly be taken as a minimum. This geological claim for a vast antiquity of the human race is supported by the similar claims of prehistoric archæology and the science of culture, the evidence of all three departments of inquiry being intimately connected and in perfect harmony." *

This is about as clear a case of special pleading, under the guise of a simple record of facts, as one often meets. Surely the "positiveness" of the evidence doth not yet appear, and as for the "harmony" between the various departments of inquiry, we have yet to find it out.

After this sort of an introduction we are fully prepared to find, by reading on, that he takes the usual course; that is, quotes the statements of only

* E. B. Tyler, in *Encyclopædia Britannica*, article "Anthropology."

those who have been endeavoring to show a vast antiquity for the human race, and then, having quoted such, draws his conclusions therefrom as if from proven data. But it will be shown by authorities which are above all suspicion of unfairness, and beyond refutation, that the data upon which these inferences rest—and they every-where confess them to be for the most part mere inferences—are not well authenticated, and are, at the best, very unworthy to be made the foundation of subsequent reasoning.

As a good example of the prevailing uncertainty manifest among the very clearest and best of this class of investigators, the reader is referred to a volume published in 1874 by W. Boyd Dawkins, entitled *Cave Hunting.* Mr. Dawkins is a scholar of very high merit, and we owe him a large debt of gratitude for the genuine work he has done, and would by no means cast any reflections upon his candor, but simply invite attention to the following passages, and leave the reader to draw his own conclusions. After a preliminary survey of the field, and a forcible presentation of the case as a whole, he says:* "We must, therefore, give up the idea of measuring the past beyond the memory of man, as represented in historical documents, by the historic unit of years. We merely trace a definite sequence of events separated one from another by uncertain intervals."

Then, after some three hundred pages of elaborate

* Page 136.

and skillful grouping of the records of researches in the various regions of Europe which abound in the remains of extinct species of animals and rude stone implements, and after some rather vigorous assertions and paradoxical conclusions, he says: "No remains have been discovered up to the present time in any part of Europe which can be referred with certainty to a higher antiquity than the pleistocene age. The paleolithic people or peoples arrived in Europe along with the peculiar fauna of that age, and, after dwelling here for a length of time which is to be measured by the vast physical and climatical changes described in the last three chapters, finally disappeared, leaving behind as their representatives the Esquimau tribes of Arctic America. There is no evidence that they were inferior in intellectual capacity to many of the lower races of the present time, or more closely linked to the lower animals. The traces which they have left behind tell us nothing as to the truth or falsehood of the doctrine of evolution. It must, indeed, be allowed that the study of fossil remains throws as little light as the documents of history on the relation of man to the lower animals. The historian commences his labors with the high civilization of Assyria and Egypt, and can merely guess at the steps by which it was achieved; the paleontologist meets with the traces of man in the pleistocene strata, and he, too, can merely guess at the antecedent steps by which man

arrived even at that culture which is implied by the implements. The latter has proved that the antiquity of man is greater than the former had supposed. Neither has contributed any thing toward the solution of the problem of his origin." *

There are several other treatises upon this subject by eminent English scholars which it has been a pleasure to read, and I have been strongly impressed by the great unanimity of their decisions that man is a "very ancient" animal, notwithstanding the extremely diversified methods by which they reach them, and their flat self-contradictions in many essential particulars. As, for example, Edward T. Stevens, F.R.S., in *Flint Chips, a Guide to Prehistoric Archæology*, reaches the same general conclusion as Sir John Lubbock, Dawkins, Tyler, Prestwich, Tournal, Jones, and Evans, but cannot agree with them at all on certain points which would seem to be vital to any established reasoning.

The great work by John Evans, F.R.S., published in 1872, entitled *The Ancient Stone Implements, Weapons, and Ornaments of Great Britain*, is the most pronounced of its class. It comprises upwards of six hundred large, closely printed pages, and examines in detail almost every discovery or locality which, in any way, seems to indicate a remote antiquity for man. He seems not to see the objections to his theory which lie all around him in the same localities.

* *Cave Hunting*, by W. Boyd Dawkins, F.R.S., p. 436.

He grows enthusiastic, and almost poetical—I will not say visionary—over the wondrous old implements of the various "ages" and the prehistoric dwellers in the unearthed caves and cities, and closes the whole by saying:

"The mind is almost lost in amazement at the vista of antiquity displayed. So fully must this be felt that it is impossible not to sympathize with those who, from sheer inability to carry their vision so far back into the dim past, and from unconsciousness of the cogency of other and distinct evidence as to the remoteness of the origin of the human race, are unwilling to believe in so vast an antiquity for man as must of necessity be conceded by those who, however feebly they may make their thoughts known to others, have fully and fairly weighed the facts which modern discoveries have unrolled before their eyes."

This is certainly good rhetoric and pleasing fancy to place at the close of a scientific treatise. At the same time it stands as a refreshing confession of imaginative hypotheses rather than scientific calculation, and need not stagger the faith of any child of God in the divine authorship of Genesis. His "sympathy" for those of us who are "unable to carry our vision so far back into the dim past" is received with all thanks; but, not having any need thereof, we return it to those who, like this zealous digger in the prehistoric caves of mother earth, are ever groping backward in the darkness and finding only contradic-

tions of one another's theories, and an endless breaking up of visionary hypotheses, instead of facing about toward the clear light of revelation and beholding the wondrous harmony of the stone-written, bronze-written, iron-written testimonies with the testimonies recorded by Moses.

But we will not prejudge the case, neither will we hold up these highly imaginative conclusions to ridicule. Leave scoffing to the opponents of Christianity. It is no part of argument, and unworthy the genuine inquirer after truth.

It is well that, during all these years of intense activity in searching out the records of the past, as they appear in the hoarded stores of the famous European caves, valley gravels, lake dwellings, and drift deposits generally, Christian scholars have by no means stood aloof or taken second rank. The time was when there seemed quite a strong inclination in this direction, and a decided disposition to frown upon the rapid advances of science. Faint-hearted believers in general, and lazy, half-educated theological professors, who had been living in a past age for thirty years, together with preachers of the same stamp, in particular, were horrified at the inroads of what seemed a godless culture, and called loudly upon all true Christians to stay the approach of the iconoclastic hordes who threatened to destroy the Bible and all things sacred; when, in reality, the only permanent tendency was to destroy some of their erroneous dog-

mas, which the Bible never sanctioned, and cause them the insufferable labor of re-writing some of their lectures and sermons. This time soon passed away. Those obstructionists who would neither get out of the way of Progress nor advance with her were unceremoniously pushed aside, and left to whine over the "irreverence of hasty conclusions," while earnest seekers after all available light upon the great problems with which we have to deal eagerly took up the work of exploration and excavation, deciphering and interpretation, and have brought forth such rich and manifold results, during all these recent years, that today the Christian world stands in grateful and ever-increasing astonishment before the surprising verifications of Bible history and prophecy, and even chronology in general. Proportionately depressed are the skeptical investigators, who were formerly so jubilant, but who now with almost every series of new developments see their assumed facts vanishing into airy phantoms, while that humble old Mosaic record, which has been a target for their scorn and ridicule, continually takes on new features of beauty, strength, and forcefulness. It will not be possible for me to lay before my readers in detail these gratifying and conclusive results, but we may glance at a few of the more significant.

I invite attention first to the uncertainty of all their calculations based upon the much-talked-of stone and bronze implements and the various "finds" in the

caves and valley gravels. This uncertainty arises largely from the exceeding great difficulty—nay, the utter impossibility—of accurately making out the geologic record of the times just preceding and immediately following the Glacial epoch. This epoch seems to stand like a mountain of ice obstructing every approach to certainty. All careful investigators are fully agreed that, geologically speaking, man is of recent origin—that his advent belongs somewhere in the later Tertiary period. But where? The geologist who commences at the Azoic rocks, and traces the earth's building through the untold ages of paleozoic time in regular and undisputed sequence of the Silurian, Devonian, and Carboniferous ages, and on with equal confidence and certainty up through the Triassic, Jurassic, and Cretaceous periods of Mesozoic time, entering with assurance upon Cenozoic time, soon finds, toward the close of the Tertiary period, evidences of great earth disturbances which seriously "disturb" his reckoning. The regular succession of deposits and strata is completely broken up. He searches in vain throughout every accessible portion of the earth's crust to find some spot where the rocky pages of this wondrous book have not been tilted, and broken, and furrowed, and crushed, beyond recognition; nay, even been ground into dust and pebbles, and scattered from Siberia to the Gulf, and from continental center to ocean shores. Failing to find any place not thus broken up, he makes the best of it by selecting a

place here and there where may be found a few paragraphs, or pieces of a page intact, and goes to work to reconstruct the record. Before the Glacial epoch set in, our earth had attained her full proportions, and abounded in a most luxuriant vegetation and a wealth of animal life almost exceeding comprehension. This is plainly indicated in many unmistakable remains. The climate was mild, and every thing seemed to conduce to gigantic growth in animal forms, and colossal size in plants and trees. But there are no indications that human eyes ever saw any of them in life.

At the close of the Pliocene the climatic conditions were wholly changed. Rigorous cold supervened upon spring-like mildness. The great land continents sank and were partially submerged. Immense fields of snow and ice accumulated upon all the northern portions of the earth which were not beneath the seas. The desolation of an Arctic winter settled like a pall upon a large part of what was before teeming with life. Millions of dead animals of various species were frozen in the ice or buried in the snow.

Glaciers of all sizes began moving down the steep declivities, carrying with them their mountain-like heaps of earth, and plant and animal accumulations. In their course they plowed gorges, filled up valleys, and leveled hills, taking up or laying down material as the mighty forces of the onward movement required. How long this continued no search has yet revealed; doubtless for many thousands of years. Ultimately the

land again began to rise, and the continents to take their former place, though they seem not yet to have fully reached their Pliocene dimensions. With the elevation of the land came again a milder climate; copious rains fell, and immense rivers ran seaward, every tributary carrying down remains of the previous destruction. Any reader, even the one unaccustomed to the details of geology, can readily see how, in such a disturbance as this—in such a profound breaking up of all things, in such a subsidence of the earth's surface and subsequent upheaval — there would be a very general shuffling about of all remains. Skeletons of water animals would be left on hill-tops, while mountain climbers would be carried into deep marshes, and remains of species which never approached each other in life would be promiscuously mingled.

Seeing this, he will understand how uncertain are the data on which some scientific men so dogmatically pronounce. Then, too, he must take into the account that this uncertainty increases as we enter the Post-glacial or Modern epoch, where we first find evidences of man's existence, and where so much depends upon accuracy of details and certainty of data. Only limited portions of Europe and a small section of eastern America afford any satisfactory working-ground. The stone implements and weapons so much depended upon, mixed up with human and animal remains deposited in caves and valley graves, while

of absorbing interest, and well worthy the most painstaking search, can hardly be depended on to make up a chronology worthy to be called scientific.

But, lest I should seem to unwarrantably depreciate the character of evidence upon which so many eminent men have posited weighty treatises, I will here quote Sir William Dawson, whose right to speak with authority on this topic cannot be controverted. In view of the fundamental importance of the questions involved, several of his paragraphs must be given:

"We may, in this investigation, limit ourselves to the consideration of the earliest or paleocosmic men; and the two main points with reference to them embraced in our present subject are their antiquity and their relation to modern races of men. With respect to the first point, we shall find that little certainty as to their absolute date can be attained, except that they are geologically very modern and historically very ancient; and, with respect to the second, that they are closely allied to that race of men which in historic times has been the most widely spread of any. As these men are prehistoric, we can have, with respect to their antiquity, only geological evidence, and this resolves itself into the calculation of the rate of erosion of river valleys, of deposition of gravels and cave-earths, and of formation of stalagmite crusts, all of which are so variable and uncertain that, though it may be said that an im-

pression of great antiquity beyond the time of received history has been left on the minds of geologists, no absolute antiquity has been proved; and while some, on such evidence, would stretch the antiquity of man to even half a million of years, the oldest of these remains may, after all, not exceed our traditional six thousand. With reference, for example, to the erosion of river valleys in western Europe, it can be shown that this probably belongs to a much earlier period than that of man, and that old valleys, filled with *débris* during the glacial period, could be scoured out in no great lapse of time, especially if the early modern period was, as some suppose, a time of excessive rainfall. With reference to the growth of stalagmite in caves, recent observations show that this may have been much more rapid than has been supposed, and that its rate now is no measure for that which may have prevailed at an earlier period and in a forest-clad region.

"With reference to the elevations and subsidences which have occurred, we have no measure of time to apply to them; and the question is not yet settled whether they were of a slow and gradual nature like some now in progress, or whether, like others that have occurred in connection with earthquakes, they may have been rapid and cataclysmal. If, on the other hand, we turn to the evidence afforded by the extinction of animals, we know that the reindeer and the aurochs existed in Europe up to the time of the

Romans, and the great Irish deer up to the time of modern peat-bogs. And we have no good evidence that the mammoth and cave bear and woolly rhinoceros may not have lived up to the time when men of the Biblical antediluvian period first migrated into Europe. Nor have we any good evidence as yet whether their extinction was gradual or comparatively sudden, or whether man himself may not have had some connection with their disappearance." *

The same learned author, in his latest work, says:

"The testimony of the earth coincides with that of the Bible, in representing man as the latest member of the animal kingdom, the last born of animals. The most important point with reference to any parallelism between the geological history of man and the Biblical record, is to ascertain what absolute value in time can be assigned to the several ages known as post-glacial and recent, or, in other words, how long ago it is since the glacial period terminated. So vague are the data for any calculation of this kind that the estimates of the date of the glacial period have ranged from hundreds of thousands of years down to a very few thousand. The tendency of recent investigations has been to discard the higher estimates, and to bring the close of the glacial age constantly nearer to the present time. The absence of any change in invertebrate life, the small amount of

* *Nature and the Bible*, by Sir William Dawson, F.R.S., p. 159.

erosion that has occurred since the glacial age, and many other considerations, have been tending in this direction.

"I may refer to only one criterion, the importance and availability of which were long ago recognized by Sir Charles Lyell. This is the recession of the Falls of Niagara from the shores of Lake Ontario to their present position. This recession is effected by the cutting back of beds of limestone and shale; and the resulting gorge, about seven miles in length, cuts through the deposits of the glacial period, proving, what on other grounds would be obvious, that the cutting began immediately after the glacial age.

"When Lyell estimated the time required, the rate of recession of the fall was supposed to be one foot per annum. It is found, however, by the results of actual surveys, to be three feet annually. Lyell's estimate of the time required was thirty thousand years. The new measurements reduce this to one third, and further abatements are required by the possibly easier cutting of the first part of the gorge, by the fact that a portion of it of uncertain amount above the "whirlpool" had been cut at an earlier period and needed only to be cleared out, and by the probability that in the early post-glacial period there was more water in the Niagara River than at present. We thus have physical proof that the close of the submergence and re elevation of the American land could not have occurred more than about eight thousand

years ago. It follows that the ordinarily received chronology, of about four or five thousand years for the post-diluvian period, and two thousand or a little more for the antediluvian period, will exhaust all the time that geology can allow for the possible existence of man, at least in the temperate regions of the northern hemisphere. Facts recently ascertained with reference to the delta of the Nile lead to similar conclusions for the oldest seats of human civilization.

"Whatever demands may be made by philologists, historians, or antiquaries, or by the necessities of theories of evolution, must now be kept within the limits of facts such as those above referred to, and which are furnished to us by physical geography and geology.

"These facts must also lead to considerable revision of the excessive uniformitarianism of one school of English geologists, and to explanations more reasonable than some which have been current as to the deposition and age of superficial gravels and other similar deposits. When all these points have been adjusted it will be found that there is a sufficiently precise accordance between science and Bible history with regard to the antiquity and early history of man." *

Here we have the testimony of one of the most accurate, and at the same time one of the most enthusiastic geologists, who has won for himself a place of

* *Points of Contact Between Revelation and Natural Science*, p. 20, *seq.*

great eminence solely on his merits, and speaks with authority upon any question pertaining to fossil remains, drift deposits, valley erosions, and kindred subjects. But he is only one of many who have reached the same conclusion. The facts are rapidly ranging themselves all on this side. What once seemed to support the theory of man's great antiquity is found to directly oppose it, or at least to lend it no further aid.

In regard to this whole subject of the various "ages"—stone, bronze, and iron—into which writers on the antiquity of man so confidently divide the post-glacial period, or prehistoric time back to the origin of man, there can be no possible approximation, even, to certainty. It is almost ludicrous to read an elaborate argument of a celebrated anthropologist, undertaking to convince us that he can not only determine absolutely these several ages by looking at the various deposits, but that he can invariably make out the difference between implements of the paleolithic and the neolithic. Wonderful accuracy indeed! Astonishing skill derived from "constant investigations for many years!"

The ludicrousness of such pretensions appears, when we consider that not only was the earth's crust left by the glacial upheavals, subsidences, and erosions in a most chaotic state, but the use of stone, bronze, and iron for implements and weapons was continued through many succeeding centuries. In other words,

these ages overlap and intermingle in such a manner that they teach us little concerning even the comparative antiquity of any "find" to prove that it belongs to one of these "ages." Of course, it is eminently proper to speak of a period in the history of any people during which stone was chiefly used for implements and weapons as the "stone age," and of a period when bronze was used as the "bronze age;" and we cheerfully adopt the phraseology, finding it very convenient for a general designation. But, as a matter of fact, there are no such exclusive "periods." This is incontestably proven in many ways. No matter whether we search among the Megalithic monuments, bone caves, tumuli, and lake dwellings, or elsewhere amid the remains of primitive man and his associates, we find that not only did the use of stone implements and weapons in some countries continue long after bronze and iron were introduced, but that after bronze and iron were in common use by certain peoples, and stone implements discarded, other peoples were still confined almost exclusively to stone.

Any student of the ancient history of Greece and Rome finds ample confirmation of this statement, while, if he look into the history of ancient Egypt, China, and Japan, it is even more evidently true. Dr. Philip Smith, in his *Ancient History of the East*, gives such a mass of facts bearing upon all phases of this subject that I would earnestly recommend every one to procure the book and carefully read it. On

this particular point he says: "Hatchets, arrow-heads, knives, and other implements, both of flint and bronze, nails and fish-hooks of the same metal, leaden pipes and jars, armlets, bracelets, and finger rings of iron were not uncommonly found mixed up together in a way plainly indicating that they were used by the same people in the same age." *

Even some of the authors who contend most strongly for the immeasurable antiquity of man, and who base their conclusions largely upon the great length and definite mapping out of these much-talked-of "ages," are constrained to admit the fact of their overlapping and in-running. Mr. Edward T. Stevens, to whom the reader has already been introduced, is a good example. Led by his own reasoning, wherein he has declared over and over again the almost incomprehensible antiquity of the stone age, he is nevertheless compelled to admit that "implements resembling in form some of the European paleolithic types were made by the aborigines of America at a comparatively late period, and that the people usually termed the 'mound-builders,' were probably the makers of these implements." †

A most important admission indeed for Mr. Stevens to make! The same conclusion has been arrived at with regard to these and many other collections of stone implements; and they establish beyond question

* *Ancient History of the East*, by Philip Smith, B.A., p. 375.

† *Flint Chips*, by Edward T. Stevens.

that not only is the stone age not tens of thousands of years old, but that it is not necessarily six thousand years old. When we critically examine their elaborate deliverances concerning the bronze age the case appears still worse for them. After much good argument and many important conclusions have been based upon its revelations, we often fail to clearly make out even its existence, much less its history.

Another common source resorted to, to prove the great antiquity of man, is the peat as it is found deposited in various localities. With special care has the peat in England, Ireland, France, and Denmark been examined by many archæologists. The method of calculation is obvious to every reader. Peat is of vegetable origin. As it lies in the lowlands of these countries, its depth can be easily measured. As easily can its composition be clearly determined. Only the requisite amount of time and care is necessary to ascertain exactly what vestiges of a previous civilization, or of prehistoric life, are herein preserved. At various depths there have been found, in great abundance, the stone, bronze, and iron implements and weapons characteristic of these "ages," and also remains of man and the lower animals. To determine the age of any particular article or fossil, it was only necessary to ascertain how many years the superincumbent peat had been in forming. The problem seemed a simple one, and was quickly solved by such men as Lyell, Lubbock, Tuttle, and others, who as-

serted confidently that many thousands of years were certainly required for its deposition. Sir John Lubbock said 7,000 years, M. Boucher de Perthes 30,000 years, Mr. Hudson Tuttle 120,000 years. These being famous men, their calculations were readily accepted by all skeptics, and jubilantly proclaimed by a host of admiring infidels.

"Human remains in the Danish peat at least 20,000 years old;" "Implements of stone surely manufactured by man, buried in peat that is certainly 24,000 years old;" "Unmistakable evidences of man's existence on the earth 100,000 years ago at least," and other such like expressions, were enthusiastically reiterated, and applauded to the echo in popular assemblies. "Moses behind the times by 20,000 years;" "Multiply your Bible chronology by ten, and then you are too fresh!" "What do you want with that old book any way?" and kindred slurs and flings were freely indulged in. Half-hearted Christians stood aghast. Even brave hearts trembled. Tremblingly, yet vigorously, they went to work. What was the result? The first, and a very important one, was the proof that the much-talked-of "periods" in the peat formation, which it had been asserted could be so clearly made out as, first, the "pine-forest period," second, the "oak-forest period," and third, the "beech-forest period," were merely fictitious divisions, and that all these were largely contemporaneous.

This alone brings to naught much of the beautiful rhetoric which has been displayed in endeavoring to show how the various "periods" of the peat and the various "ages" of implements and weapons substantiated each other's claims to "vast antiquity." Not only have these periods, which were so confidently claimed to be successive, been proved, by the clearest possible evidence, to be contemporaneous, but out of the same layer of that peat in Ireland have been dug up the well-preserved remains of warriors still clad in their metallic armor, and having upon their fleshless shoulders the gold epaulets of comparatively recent years. All around them, on the same level, were found arrow-heads of stone in abundance and a number of bronze battle-axes.

"Amazing," "mind-wearying" antiquity indeed! wherein we find sturdy warriors whose insignia stamp them as belonging to the Christian era. "Moses is certainly out of date," for peat has formed twenty feet deep over sure indications of human life, and "twenty feet deep means at least sixteen thousand years!" But, hold! Here we have a coin found thirty feet down in the same bog. According to similar "unmistakable calculations" it must be twenty-four thousand years old! And, doubtless, some were just getting ready to proclaim as a fact that man had not only been on the earth twenty-four thousand years, but enough longer than that to have learned the use of money before that date. But, alas! after

rubbing off the dirt, behold! there, in plain characters, was the stamp of the Emperor Gordian, 237 A. D.

Men scarcely believed their own eyes for a time. But other confirmations of the folly of these fabulous thousands of years were rapidly forthcoming. A body clad in woolen garments was found at a depth of six feet. The same calculations would make this body nearly five thousand years old; but it was easily identified as having lived not more than four hundred years ago at the longest.

It is repeatedly and positively affirmed that a depth of fifteen feet of this deposit carries us back to the stone age, thousands of years beyond the remotest possible Bible chronology. But let us see. Down eighteen feet were found coins of Edward IV., 1480 A.D. Did Edward IV. reign in the Neolithic age? Let those who adopt these calculations, or accept the conclusions drawn therefrom, either answer yes or cease to quote any thing so ridiculously absurd.

Leaving now these remains of prehistoric man and these interesting implements and relics, all of which a true science of archæology ranges on the side of revealed truth, and finds to be in perfect harmony with the Bible as far as their meanings have been accurately traced, I invite attention briefly to works of ancient art, inscriptions, and hieroglyphics, as bearing upon the antiquity of man.

This department of research has occupied much attention during the whole of the present century,

but especially for the last twenty years. The reviews, journals, and quarterlies of this and other lands have been, and are now, literally burdened with the records of searches and decipherings, while large and costly volumes issue from the press with such frequency that it is absolutely impossible for the general student to read the tenth part of them. Enough may be examined, however, to give one an acquaintance with the fully ascertained facts, and this is all that is generally desirable. Away back in the beginning of the century there was much stir over certain ancient zodiacs. The period was one of peculiar unrest in the religious world. A few of the most able journals were ranged defiantly against the Bible, notably the *Edinburgh Review*. The student who wishes to get the strongest putting of skeptical arguments during the first half of this century will do well to consult its files. Then, having before his eyes skepticism's "best," he can see how it appears in the light of subsequent discoveries, and be prepared to more carefully weigh the proud deliverances of more recent years. Turning to Volume XVIII, for 1811, we find an extended argument to prove the great antiquity of the zodiacs of Dendera and Esne, which, engraved in wood, were found by Napoleon in Egypt. They were fastened upon the ceilings in the temples. The Signs of the Zodiac—lion, virgin, balance, scorpion, archer, and capricorn—were engraved in regular succession there-

on, seeming to indicate a remote antiquity astronomically reckoned.

The gist of the argument, in a few words, is as follows: "The equinoxes recede a sign in about two thousand one hundred and fifty years; and consequently since the sun at the summer solstice is now in the first degree of gemini, and was about the twenty-fourth of cancer when these zodiacs of Dendera were constructed, they cannot be referred to a much later period than three thousand eight hundred years ago. The zodiac of Esne is unquestionably much more ancient than those of Dendera."

The argument seemed conclusive. Figures would not lie—especially astronomical figures. There was almost a panic in some ecclesiastical camps. Atheistic France was wild with hilarity over the complete refutation of Bible chronology. The story was told in pamphlets, and tracts, and periodicals throughout the reading world. Even those who were scarce able to read caught up the prevailing cry of "Away with Moses and the Bible!" But a patient, serious-minded scholar, bent upon knowing the truth, had also been in Egypt—the younger Champollion. He had become an expert at deciphering the strange hieroglyphics of that land of wonders. He had gone into the temples at Dendera, and succeeded in clearly making out in Greek characters the names of several Roman emperors, among whom were Tiberius and Nero, while on the porch of the Esne temple he read in

the same language "Antoninus Pius" and "Claudius." He was in no special haste to herald these decipherings to the world, for they were only a small part of the great mass of evidence, confirmatory of the Bible record, which he was constantly accumulating, and so the zodiacs were torn down and carried home to be exulted over by infidels, as above described, before Champollion returned. When he did return, and announced the plain fact that these zodiacs were not as old as the time of Nero, and proved it by what was actually engraved upon them, infidelity stood aghast, and faint-hearted Christians again took courage, as through the lifting clouds of another disappearing storm the granite front of unshaken Truth stood forth in the sunlight.

This is a fair sample of the general course of events in connection with this department of inquiry ever since: First, the discovery of some interesting inscription or device; second, the confident announcement of great antiquity, and the consequent overthrow of the Bible account of man's origin; third, the discovery that its date is within the records, and that the very article which was thought to militate against the Bible is a strong confirmation of its truth.

With the giving of "a sample" I must be content; and, in lieu of further details, direct the attention of the reader to the numerous well-known works devoted specifically to this subject.

There is perhaps no better authority on all ancient documents pertaining to Egyptian and Babylonian antiquities than George Rawlinson. Neither this nor any previous generation has furnished a more accurate or painstaking observer and recorder of the facts. Having examined and tested in every possible manner the works of Berosus, the Chaldæan, and Manetho, the Sebennyte, he gives it as his opinion that they are of very great value. This estimate, by one who has so good a right to judge, renders it very important to ascertain just what the outcome of their teaching is concerning the antiquity of man, and the Bible account of creation; for Berosus, in particular, has been very extensively quoted by the advocates of a great antiquity, and claimed as a most formidable adversary of Bible chronology. The reader of almost any one of the pretentious skeptical works on this subject would conclude, from the quotations from Berosus, that the full weight of his authority was on the side of an almost fabulous antiquity.

What does Rawlinson say?

"If we now proceed to compare the Mosaic account of the first period of the world's history with that outline which may be obtained from Egyptian and Babylonian sources, we are struck at first sight with what seems an enormous difference in the chronology. The sum of the years in Manetho's scheme, as it has come down to us in Eusebius, is little short of thirty thousand; while that in the scheme of Berosus, as

reported by the same author, exceeds four hundred and sixty thousand! But, upon a little consideration, the greater part of this difficulty vanishes. . . . Omitting in each case what is plainly a mythic computation, we have in the Babylonian scheme a chronology which mounts up no higher than two thousand, four hundred and fifty-eight years before Christ, or eight hundred years after the deluge (according to the numbers of the Septuagint), while in the Egyptian we have at any rate only an excess of about two thousand years to explain and account for. . . . And this latter discrepancy becomes insignificant, if it does not actually disappear, upon a close scrutiny. . . . Some of the greatest names in this branch of antiquarian learning are in favor of a chronology almost as moderate as the historic Babylon, the accession of Menes, according to them, falling about 2660 B. C., or more than six hundred years after the Septuagint date for the deluge." *

Thus are the castles of Infidelity again brought down upon its own head, and one more element of confirmation added to that revelation of God found in the origin of man; and, did space permit, it would be very easy to add many others. The rapidly multiplying confirmations of the Bible record actually embarrass the Christian apologist by their variety.

Christ once said concerning his disciples, "If these

* *Historical Evidences*, p. 63.

should hold their peace the stones would immediately cry out;" and it would seem that, without waiting for them or their successors to hold their peace, the stones have actually begun crying out; and, in these last decades, the voices have become so numerous, and have in them such a clear and definite ring, that infidels are becoming afraid of that department of research which once seemed their chosen field. For scarcely can they unearth an old burial-place, or decipher some ancient inscription, in the hope of refuting Moses, without having it lift up its long-imprisoned voice and cry aloud in praise and honor of Him who "in the beginning created the heavens and the earth," and, as the crowning act, formed man in his own image. Christian scholars, on the contrary, who formerly almost feared the unsealing of these stony lips, now urge on the work with avidity, and eagerly listen for every new voice, finding great satisfaction in its clear witness to the genuineness and authenticity of the Book. But, pleasing as it might be to record these testimonies further, I must bring this chapter to a close, confident that enough has been written to establish the second part of our introductory proposition; namely, that, concerning the origin of man, the book purporting to be a divine revelation is in perfect harmony with all ascertained facts as taught by the most advanced science, and entirely adequate to account for the result.

The following, from the Russian of Derzhavin, is full of both truth and beauty:

"Whence came I here, and how—so marvelously
Constructed and conceived? Unknown! This clod
Lives surely through some higher energy;
For from itself alone it could not be.

"Creator! Yes! Thy wisdom and thy word
Created me! Thou source of life and good!
Thou Spirit of my spirit, and my Lord!
Thy light, thy love, in their bright plenitude
Filled me with an immortal soul, to spring
Over the abyss of death, and bade it wear
The garments of eternal day, and wing
Its heavenly flight beyond this little sphere,
Even to its source—to Thee—its Author there."

"O rich and various man! thou palace of sight and sound, carrying in thy senses the morning and the night, and the unfathomable galaxy; in thy brain the geometry of the city of God; in thy heart the power of love and the realms of right and wrong."—*Emerson.*

"I am fearfully and wonderfully made: marvelous are thy works; and that my soul knoweth right well."—*David.*

"Man is the hero of the eternal epic composed by the Divine intelligence."—*Schelling.*

> "'Tis immortality deciphers man,
> And opens all the mysteries of his make."—*Young.*

"There is but one temple in the world, and that is the body of man. Nothing is holier than this high form. Bending before men is a reverence done to this revelation in the flesh. We touch heaven when we lay our hand on a human body."—*Novalis.*

CHAPTER II.

IN HIS PHYSICAL STRUCTURE.

The purpose of the present chapter is to show that man is a revelation of God in his physical structure. We have already seen that he is a revelation of God in his origin. The elucidation of this proposition has involved the examination of some of the naturalistic theories of life. It is not my purpose, at present to open these for further discussion. The reader not already convinced that none of the physical theories of life can account for its origination would hardly be reached by further argument. We enter upon this chapter agreed that man was created by supernatural power. In view of the fact that all other theories of his origin are contrary to the demonstrations of science, and out of accord with human reason, while this is in perfect harmony with those demonstrations, and in exact accord with reason, the *reason*able man, the rationalist properly so called, cannot do otherwise than accept the proposition, "In the beginning God created."

In entering upon the consideration of the marvelous structure of man's body, and the evidences of infinite wisdom therein displayed,I would not therefore be understood as undertaking to demonstrate the existence of

an otherwise unknown God. The absolute validity of the argument from design, as a fundamental posit of theism, is an open question, which it is not my province to here discuss. But, having the body of man before us created by God, as a previously demonstrated fact, the whole domain of design argument, as drawn from that body, opens as an additional revelation of God. This sort of revelation is of much value notwithstanding the fact that it is secondary to the book revelation. I speak of "the body of man created by God as a previously demonstrated fact," not meaning to be understood as thinking that the existence of God has been, or even can be, demonstrated in a physical or materialistic sense. I wish to be fully understood on this point at the very outset, for one of the most common, as well as one of the most unfair, objections to theism is that it fails to demonstrate the existence of God, the objector using the word "demonstrate" in the ordinary semi-mathematical sense. Let it be distinctly understood that no theist who understands the foundation principles of his argument professes to have accomplished, or even attempts, such demonstration. The objector who assumes that he does is simply loading the argument with burdens which do not belong to it, in the hope of sinking it. There is always, and must ever be, a large increment of probable evidence admitted into every argument which has to do with the great questions of life and destiny. To undertake to bring

these immortal problems to the same methods, in all respects, that we use in demonstrating that "In every right-angled triangle the square of the hypotenuse is equal to the sum of the squares of the other sides" * is manifest absurdity, and unworthy the high scientific source whence the demand for it so often comes.

Those who make this demand evidently forget the wide difference existing between the mere formal sciences, and those which have to do with real entities.

Even the physical scientist, be he genuine, does not profess to "demonstrate" his theories in the mathematical sense, but gathers *facts* with great carefulness, interrogates nature in all directions, finds out all that he can, tests his hypotheses by these *facts*; brings all into harmony as far as possible, and modestly affirms that, as far as the facts are ascertained, the theory accounts for them. Only the crude investigator boastingly dogmatizes. It will be observed that the subject of this chapter—"Man a Revelation of God in his Physical Structure"—says nothing about demonstration.

The simple fact is that this word has become so common that even the most discreet speakers and writers too often fail to discriminate between absolute proof, and proof into which the element of probability enters. The reason is twofold: first, the natural tendency to assume that the listener or

* Prop. 47, Euclid's Elements.

reader thinks our thoughts after us, as we think them, even though not fully explained; second (and of greater weight), the fact that in all the more important concerns of life—in society and business, in church and state, in all departments of our manifold relations which are not of the grossest material sort — we constantly act on probable evidence as though it were demonstrative.

Hence we see and hear much about the "demonstrative force of the argument from design," "the absolute force of analogy," "the impregnable fortress of systems of final cause," etc. These are all, doubtless, well-meant phrases, and, in the sense in which they are uttered or written, in the intent of the author, they are probably correct; but we need to learn the careful and accurate use of our instruments before we can succeed in doing our work well.

That design inheres in intelligence, that intelligence is necessary to design, that one cannot exist without the other, are accepted fundamentals of thought. But just as soon as we enter the domain of the immaterial, the realm of mind, and commence to talk about its necessary laws, we get outside of mathematical demonstration. This we are doing constantly. No one of us can engage in active life a single hour without it. Hence the absurdity of undertaking to depreciate the value of this sort of reasoning. If the indications of design in man's body are so manifest that they cannot rationally be ac-

counted for without intelligence, and if the fundamental principles of thought, as far as we can understand them, are violated by a refusal to admit such intelligence, then that design becomes a revelation or an illustration of God; not a demonstration, as before urged, but a setting forth, a bringing out before the mind, an illustration or making clear, a revealment of that Supreme Intelligence we call God. And is not this the greatest need of the human race to-day?

I will not stop here to argue the question whether or not we know God by intuition; but who is there without a present consciousness that God exists? Certainly no one who is reading this book, for the class of people mentioned in Psa. liii, 1, do not read much.

Conscious that God exists, however we may have arrived at this consciousness, what we most need is a clearer view of him, a fuller comprehension of his attributes, a larger appreciation of his omnipotence, a brighter view of his omniscience, a sweeter sense of his unfailing love. These could not be imparted to us by the written word alone. Neither could we obtain them through the formulæ of logic and science. We needed something more concrete than a syllogism, more tangible than hypothesis; and the Creator, knowing the need of his creatures, and having all means at his command, spread abroad throughout the material universe, and particularly in man's own dwelling-place, abundant illustrations of his mar-

velous working, his universal supervision, and his loving care.

While, therefore, we do not presume to prove the existence of God by the argument from design, we do assume to show unmistakable evidences of design in the human frame, and in so doing render a more valuable service than the other would be, even if possible.

I cannot refrain from calling attention to how much grander appears the real worth of the arguments from analogy, design, final causes, etc., when their purpose is thus seen to be revelation rather than demonstration. Few works that minister to the head alone live beyond the second generation. Bishop Butler's *Analogy* grows fresher with added years, and promises to be immortal. Why? It illustrates or reveals God as previously known in the human consciousness. It strengthens, and by inferences constantly drawn in the mind of the reader mightily confirms, his faith in the existence of God; but its chief service is the clearer vision afforded by it of the divine attributes.

Those skeptics who have written so confidently against this and similar works have entirely missed their fundamental meaning. Even some Christian scholars have felt called upon to apologize for the supposed weakness of the good bishop's argument, from the same cause.

But these are not as numerous as formerly. Men

are coming to realize that mental and physical science are closely related; and it would seem, from a careful survey of the present aspects of theological subjects in the light of recent advances in the mental and physical sciences, that the minds of men were being more and more drawn away from the old theory of a rigid demonstration of the existence of God, either teleological or ontological, and more and more drawn toward the theory of an immediate view of God, a coming into his personal presence, without the intervention of any *a priori* or *a posteriori* high-priest of demonstration. I do not mean that men are drifting toward pantheism or a pure idealism, but I mean that they are coming to think more of life and less of logic—more of a direct revelation of God in analogy and design, and less of a formal proof that shall convince only the intellect.

In an address delivered before the "American Institute of Christian Philosophy" last year by Professor B. P. Bowne, that careful thinker and most excellent authority in mental science states some facts which are exactly pertinent to the subject in hand:

"A large and important part of our beliefs are born, not of argument and abstract speculation, but of life and sentiment. These beliefs are not reached as conclusions of a syllogism, but are developed as outgrowths of life. They are there before speculation begins. . . . The failure to grasp the true nature of belief often leads to mistaken expectations and im-

practical demands, with resulting doubt and disappointment. . . . We are said to be illogical, to rest upon feeling, to take things for granted, and to do divers other things which are equally unsavory from a logical stand-point. Anti-religious polemics abound in this sort of thing, and frequently good people are puzzled by it, and made to believe that religion must live on especially uneasy terms with logic. Now, I believe that all this is a mistake. The charge of bad logic, so far as it is valid, lies not merely against our religious procedure, but against our entire mental procedure; and this charge again derives all its force from a mistaken conception of mental method and the general nature of belief. . . .

"Man is not an abstract speculator and logic-machine, but is a living being, with practical interests and necessities to which he must adjust himself in order to live at all. The human mind is practical rather than speculative. It lives and acts and has experiences long before it speculates and theorizes. In its practical unfolding it adjusts itself in a measure to the universe, but in a still greater measure it adjusts the universe to itself."

Inasmuch as these necessities of our being are ever pressing upon us, we have a right to expect to find a supply provided by the Author of that being. Even the most cursory glance at nature begins to meet this expectation, while a careful scrutiny fully satisfies it. In earth and sea and sky, in mountain, valley, and

plain, in fish and fowl and mammal, in swarming insects and creeping things, in "every thing that hath life," we find the supply of these necessities. Yea, even inorganic nature, the very rocks beneath our feet, the conformation of continents, and of sea and river systems, proclaim with marvelous, unspoken eloquence, the Unsearchable One.

Having, then, endeavored to make it plain to the reader that, on the one hand, I do not rest upon any or all of the teleological or ontological arguments for the absolute proof of the divine existence, while, on the other hand, I regard them as of great and lasting worth, I proceed to call attention to the marvelous mechanism of the human frame as one element in this material revelation of God, or, as formally stated at the head of this chapter, "The revelation of God in man's physical structure."

That with which we become perfectly familiar often loses its attraction. Although the trite saying, "Familiarity breeds contempt," may not be literally true, it suggests a truth. The first visit to Niagara fills a man with awe; he stands gazing upon its mighty power in rapt admiration, and goes away with his whole being suffused by it; he returns at intervals of a few months or years with ever-increasing interest; but let him settle down to reside within the sound of its deafening roar, and soon he will not go materially out of his way to view its marvelous grandeur.

Men and women make long and difficult pilgrimages to the big trees of California, and the indescribable wonders of the Yosemite Valley, and are so enraptured and inspired that, though they never visit them again, the vision of beauty and magnificence remains, and their whole nature is made nobler for a life-time; but children and youth grow up to manhood in the midst of such soul-inspiring sights and think little of them.

Subservient to the same tendency of our natures, we fail to find any thing specially noticeable in our own physical organism unless attention is specially called thereto, while we will travel many miles, and be at great pains and expense, to examine some uncommon wonder—which is, after all, much less wonderful than the feet which carry us thither, or the hands and eyes with which we make the examination.

The strange, the unusual, the abnormal attracts attention. As long as the clock goes regularly on with its tick-tock, tick-tock, nobody thinks any thing about the system of wheels and springs within; but let it stop, and how quickly we notice them. A hundred chicks come out of their fragile shell-houses and proceed each one to walk on two feet, and eat corn-meal with one bill, and the owner says nothing to his neighbors about it; but let one come out with four feet, and proceed to pick with two beaks, and he at once becomes the center of attraction.

Born in these living, growing, ever-changing

houses called bodies, we become so accustomed to them that we do not realize but that they are our very *selves*, instead of simply dwellings, unless some ache or pain arrests our attention. Then we say, "My head aches;" or, "My foot is lame;" or, "My hand is sore;" or, "My body is racked with pain." "My body"—yes, not I my*self*, but "my *body*." These bodies, then, are worthy of careful study. Even the most superficial view will convince us that this very familiar, every-day presence is full of wonders all unexplored by the great multitudes even of educated men and women.

THE SKIN.

Consider the garment of exquisite texture which is given the body as a covering. At first thought it would hardly be supposed that this would be chosen as showing the unmistakable marks of design, and so revealing the Designer. It seems like such an inferior part—merely the clothing, the husk—different portions of which may be protected or exposed, according to the taste or convenience of the owner.

But let us examine it a little more carefully. My authorities for the anatomical and physiological facts in this chapter are chiefly Gray, Dalton, and Marshall, whose works have been my text-books for years, and to whom I here give full credit for all technical matter not inclosed in quotation marks, and accredited to other authors.

A covering was needed which should be firm enough

to afford protection against injury, and still be sufficiently susceptible to outside impressions to give quick and accurate information of the presence of serious danger. Not only this, but it must be so constructed as to adapt itself to varying conditions of exposure, and at the same time be capable of ministering to our pleasure. This alone presents a problem of no mean importance, and not easy of solution.

But difficulties only bring into clearer view the power that overcomes them. We commonly think of the skin as a single thickness of covering, but it consists of two layers, the derma or true skin, and the cuticle or scarf-skin. This is manifest in case of a blister, when the cuticle is separated from the true skin and puffed out by the serum underneath. In the true skin we find also two layers. The under layer is firm fibrous tissue, capable of protecting within itself the various important little glands, nerves, and blood-vessels which must be there preserved for their several functions. This layer is of varying thickness and toughness on different parts of the body. The upper layer rests upon it as a yielding cushion, and at the same time as a tough, elastic, resisting covering for the deeper parts. This layer is a thin, extremely delicate, and highly sensitive one. It is made up largely of minute folds of blood-vessels, nerves, and terminal filaments of various ducts, and is supplied with nerve fibers, sparsely or in abundance,

according as there is little or great necessity for the sense of touch.

The question naturally arises, "Why this arrangement?" Why was not the sensitive layer placed under the tough and cushion-like one? Chance would have been as apt to place them one way as the other. Can we conceive the change in our condition were this transposition to take place? This covering, now so delicately sensitive as to inform us promptly of the presence of injurious agents, would be dull in sensibility to such an extent that injuries would constantly be received; which, with the resulting inflammation, would involve the deeper sensitive portion and keep us in a state of perpetual disease.

Again, why, if it be only a chance arrangement, was not the entire skin made up of this sensitive material? Blind fate might be expected to blunder upon a covering similar throughout much more readily than upon such a complicated one.

But, had this been the case all our movements would have been more or less painful, and some of our occupations, which are, under the present wise arrangement, engaged in with comfort and even pleasure, would have been impossible without the most excruciating torture. This is sufficient to indicate design; but our admiration for the wisdom manifested in the construction of these wonderful garments given us by nature increases as we look carefully at the cuticle—this scarf-skin, the superficial particles

of which we remove with every application of soap and water, and minute particles of which are constantly being rubbed off by the clothing.

The cuticle is not a mere hardened layer of the true skin, changed into this form by exposure, as might seem to be the case without careful examination. It is a distinct covering in itself considered, consisting of flattened cells stuck together, and having a sort of laminated arrangement. Why is it here? Evidently the sensitive surface of the true skin could perform its office of *feeling*, and warn us of the presence of injurious agents without it. Nay, it would seem that the usefulness of the true skin, in this particular, would be impaired by any additional covering like the cuticle. But without it the difficulty would be over-sensitiveness, such a degree thereof as to amount to constant misery.

Think of the smarting, burning discomfort when merely a small portion of the cuticle is removed, after a blister has been formed. How carefully we strive to protect it from the air, and at the same time from all rubbing, or even the slightest contact with solid substances! With unguents and lotions, oiled silks and tallowed muslin, we strive to make up for the loss of a little patch of this insignificant scarf-skin. Imagine, then, the torture of having it removed from the whole surface of the body, and the true skin left entirely exposed. The contact of the air would be like the contact of fire, while ordinary clothing would

give about the sensation of being wrapped in sheets filled with scalding water. No language is adequate to describe the suffering which would result from the loss of just this apparently insignificant membrane. This torture would, of course, render the skin absolutely useless. Hence that which at first thought seemed a hinderance is a great help. The wisdom of its design appears yet more strikingly when we consider what is requisite in its construction and adaptation, and how these requisites are supplied.

For the sensitive true skin there was needed first of all a covering which would protect it and at the same time not destroy its sense of touch or feeling. It must also have the power of self-adaptation to varying degrees of exposure or usage.

Now mark its composition. It is made up of minute cells agglutinated or stuck together. These are round or columnar next the true skin, and become flattened nearer the surface. How beautiful is this adaptation to its intended use! The rounded or columnar cells, soft and pliable, fitting perfectly against the sensitive foldings of the nerve extremities, and transmitting with accuracy every impression, and the flattened, less pliable, and somewhat toughened cells forming a beautiful, thin, elastic covering over all, and yet each and every point fitting so perfectly upon every point beneath that sense perception is unhindered.

This were indeed enough to show the most beautiful

design; but when one considers how, as the outer cell scales are being constantly removed on becoming dry and lifeless, the next ones under become adapted to take their places, while new ones constantly originate and grow in the marvelous matrix of the true skin, and further considers the nice adjustment of thickness upon the various parts of the body, being very delicate and extremely thin on the unexposed portions, and becoming thicker by use, until on the palm of the laborer's hand it is almost as tough and hard as ordinary leather, furnishing complete protection, while on the hand of the man who needs a perfect sense of touch it may be kept in the most delicate condition, his conviction of all-wise design is still further strengthened.

Nor is this all. Certain portions of the body require special protection, as the brain and the region of important glands, and over these portions we have not merely the ordinary cuticle but a growth of hair, greater or less in thickness and length according to the apparent needs. This hair is only a peculiar modification of the cuticle, consisting essentially of the same cellular structure. The ends of the fingers and toes also need some special guards or protectors, and here we have what we call nails; but they are only this same scarf-skin or cuticle with its wonderful little cells brought to a different condition of arrangement and growth. Think of nailless fingers, or fingers with nails on the balls! Blind chance would have been just as apt to put them there

as anywhere. Or, suppose the cuticle had "developed" into nails on the head and face, and into hair on the fingers and toes! Why not? The most eminent authorities tell us they are all of the same essential structure. This would seem to be indicated in the constant rubbing off of the ordinary cuticle in bathing, and the occasional cutting off of the nails and hair, and further by the fact that frequent cuttings and clippings tend to the health and rapid growth of the latter, even as frequent scrubbings tend to the health and vigor of the former. How strikingly beautiful, then, appears the wisdom of that Power which brings out of the same elements these varied substances which constitute the skin as a whole, and then out of that which is one and the same substance produces such varied forms, and places them just where they are needed, and in just the quantities required!

But there are still other wonders as yet merely touched upon. The skin must needs perform other functions than those of protection, information through touch, and pleasurable sensation. These offices would seem to make sufficient demands upon it, but others are equally imperative. I will call attention to but one; namely, excretion, or the carrying off of the watery and gaseous worn-out materials of the body. Even if chance had happened to give us a garment equal to all previously mentioned requirements it might have been a perfectly

impervious one. Inclosed in such a covering a man could not live a single day! But, as we have seen, there are scattered all over the body numerous little openings called pores. They are invisible to the naked eye, for they number millions on an average sized man, being more plentiful on some parts than on others. These are the openings of what are called sweat-glands, which are little reddish bodies situated deep down in the skin, and which are constantly drinking up the effete gases and liquids of the flesh, and sending them out by these pores.

It is sometimes supposed that it is only when we can see or feel this excretion—when we are conscious that we perspire or sweat—that it is taking place. This is not so. The fact is that one unacquainted with the science of physiology can hardly be made to comprehend how great is the amount of those substances which are constantly passing off from the healthy body. A sudden chill or "cold" will sometimes lead us to think about it, but this is only a partial closing of these millions of little outlets. It is very important, then, that they be so arranged as not to become easily stopped up. In the thicker portions of the cuticle this would almost constantly occur did they come straight out to the surface. What wisdom, then, in the spiral form which they assume in these parts, coming up, as seen under the microscope, with all the regularity of a coil spring, and opening on the surface by a flattened valve-like mouth, which

will remain open even under pressure. All this mechanism is provided for without in the least impairing the functions of touch and protection.

Finally, the attention of the reader is invited to the distribution of nerves to the skin. Here is perhaps the most complicated arrangement in the whole system. All the intricate and beautiful design hitherto pointed out would avail nothing without some means of communication with the general nervous system, and through it with the brain. This means is furnished in the most perfect manner and degree. The nerves of touch, having branched off from the main trunk, form, in the more superficial layers of the tougher portion of the true skin, a sort of plexiform mesh, out of which come almost innumerable nerve-fibers, which are distributed to all the papillæ. Every one of these nerve-filaments is connected as a distinct individual with its plexus, and thence with the nerve system. We gain some notion of their number by considering that the finest needle-point placed anywhere on healthy skin is sure to wound one of them, and have its presence reported to the brain through the whole intervening system. It is difficult to conceive of the delicacy of these nerves, and the accuracy of their reporting. Sir Charles Bell, in his celebrated Bridgewater Treatise on the hand, well says:

"It is assumed that the nerve of the eye is finer than the nerve of the finger, without considering that

the retina is insensible to that quality of matter of which we readily acquire the knowledge through touch! Nerves are, indeed, appropriated to peculiar senses, and to the bestowing of distinct functions, but delicacy of texture has nothing to do with this. The nerve of touch in the skin is insensible to light or to sound not because it has a coarser or more common texture. The beauty and perfection of the system is that the nerve is made susceptible to its peculiar impression only. The nerve of the skin is alone capable of giving the sense of contact, as the nerve of vision is confined to its own office." *

Did not the limits of this chapter forbid further enlargement upon this subject, still other beauties and intricacies of structure might be pointed out; but even this partial view cannot have failed to impress every thoughtful reader with the manifest wisdom of that design which has provided for the human body a covering that is a more valuable protection than would be a coat-of-mail, and yet so constructed as to minister to our physical pleasure in many ways, and become a most important means of obtaining a knowledge of the world about us. The importance of the sense of touch as an assistant to the sense of sight is but poorly appreciated.

I doubt whether one who has good eyes, but no sense of touch, would not find greater difficulty in obtaining a knowledge of material substances than one who has a perfect sense of touch but no eyes.

* *On the Hand*, p. 117.

I know not that there has ever been an opportunity to test the former, but many opportunities have been furnished for testing the latter, and every one is aware that, to the child born blind, the fingers become a very good substitute for eyes. And this by a texture, which, though so delicate and sensitive, may become as tough and resisting as the firmest leather—yes, may become positively horny in its consistence, and be shaved off the palms of the laborer's hands as one would shave sole-leather.

Surely in all this can be seen such evidences of design as cannot be disproved by the most skillful naturalist, nor doubted by any sane man who will give them serious attention.

THE EAR.

Now, having considered the husk, and found in it such wonders of manifest design, such beautiful revelations of God, I ask attention to the organ of hearing, which is another structure but little understood and less appreciated. The sense of hearing is of very great consequence to the animal creation in general, and every species, of any degree of advancement, is supplied therewith. Many interesting facts might be gathered from a survey of the comparative anatomy of this organ, even as of others, but our attention will be confined to the *human* ear. When, in ordinary conversation, we speak of the ear, we generally have reference simply to the external ear, that curi-

ously shaped, skin-covered cartilage which is fastened to the side of the head. But, while this is very essential, it by no means constitutes all of the ear, or even the most important part thereof. It is essentially a gatherer of aerial vibrations, so arranged as to transmit them, when gathered, through the auditory canal to the tympanum, or ear-drum. Although but a simple structure, it would be beyond the power of art to produce its duplicate, as regards its adaptations to the varying conditions under which it is placed; and its general contour has never yet been improved upon, for gathering and transmitting sound-waves.

The auditory canal is about an inch and a quarter in length, and ends at the drum of the ear. Chance might have placed the ear-drum on the outside; but, being of necessity a delicate membrane, it would have been subject to constant injury and disease from exposure; hence, the all-wise Designer placed it within the protecting bones of the skull, and constructed a skillfully arranged passage thereto, through which the sound-waves can pass unimpeded, but from which solid substances are excluded. This passage-way is guarded at the entrance by numerous fine, but quite stiff, hairs. As an additional protection against the intrusion of insects, and for the purpose of keeping the skin and cartilage soft and pliant, numerous little wax glands are provided, which constantly send out a sort of bitter, sticky secretion exactly adapted to these purposes.

Another mark of wisdom appears just here, in the fact that the middle of this canal is higher than either end, thus lessening the liability of small particles of liquids, as drops of perspiration, to find their way to the sensitive tympanum. The fact of its general direction being obliquely forward is an additional safeguard. Thus do evidences of design meet us at the very entrance to this unpretentious organ, and, were we to go no further, sufficient has been found to confirm our belief in the impossibility of its chance formation.

But as soon as we enter upon an examination of the middle ear these evidences rapidly multiply. We find here an irregular cavity a little less than half an inch long, and about one fourth of an inch in diameter. It is filled with air, and has for a part of its boundary the ear-drum. We are still only in the ante-room. The internal ear, at which we are to look hereafter, is the real instrument of hearing; the external and middle ear being only accessory thereto. But what marvels of wisdom have we here, even in the ante-chamber!

Most carefully must every sound-wave which has been gathered by the external ear and transmitted to the ear-drum be preserved and carried on to the internal ear, so that the auditory apparatus, there ingeniously protected from all harm, may receive them and transmit the impressions to the brain with perfect accuracy. To this end the ear-drum, first of all,

must be perfect, and must rest upon an elastic cushion of air. To secure this is no easy matter, in so small space as can here be given. Specially difficult is it in a living organ, where the inclosed air requires to be constantly changed in order to have it pure.

The first requisite is an escape-valve. It is well known that every drum must have a vent-hole, or the first stroke might burst the head. The tympanum, or membrane of the ear, holds a relation to the organ of hearing similar to that of the drum-head to the drum. Vent is ingeniously arranged for through the Eustachian tube. This little tube is from an inch and a half to two inches in length, and extends from the middle ear downward, forward, and inward, to the pharynx or throat. It is so arranged that its opening into the pharynx is ordinarily closed, but not at all firmly, so that, while the tympanum remains essentially a closed cavity, rendering its contents an elastic cushion, it is still not *so* closed but that there is easy communication with the surrounding parts. This secures equal atmospheric pressure upon both sides of the ear-drum. This semi-valve-like opening, or double valve-like opening, is a most interesting contrivance; for it not only permits the inclosed air to pass out on slight pressure, but also permits outside air to be forced in when occasion demands it. By this tube also, the secretions of the mastoid cells and tympanum are permitted to escape. These secretions are absolutely necessary to preserve the living mem-

branes of the middle ear in health; and yet, were there no outlet for them, they would soon accumulate to such an extent as to hinder hearing, and cause disease.

Any one who has ever had a "cold in the head," or tonsils so swollen, from whatever cause, as to close this little vent-hole of the ear, has had a practical proof of its importance. The feeling of pressure, or tension, amounts sometimes to positive pain, and great is the relief when communication, the very existence of which we hardly realized until it was cut off, is re-established.

Perhaps, however, the most remarkable indications of design found in the middle ear are seen in the complicated arrangement for regulating the tension of the ear-drum, and assisting in conveying the sound-waves to the internal ear.

It is well known to every one that sound is much more readily conveyed through solids than through air. Let the reader place his ear upon the table, and strike the bare wood with his pencil, and he will have an easy illustration. Here we have communication from ear-drum to internal ear by means of a chain of little bones, which all together weigh but a small fraction of an ounce, and yet they are perfectly formed bones, perfectly jointed, supplied with blood vessels and furnished with muscles. They are three in number. The malleus, so-called from its resemblance to a little mallet, is fastened to the ear-drum,

and has two small muscles attached to it. One of these, called the tensor tympani, tightens the ear-drum; and the other, called the laxator tympani, is supposed to loosen it. The incus is a very minute bone, shaped like an anvil, and is placed between the malleus and the third bone, called the stapes. This last is joined to the internal ear, completing the chain, and has fastened to it the smallest muscle in the body, it being only one fifth of an inch long and one fifteenth of an inch wide. Still, as nearly as can be determined, it has an important duty to perform in regulating the tension of the membranes around the opening into the internal ear.

It is true, we do not fully understand the *modus operandi* of this beautiful mechanism, and hearing is not dependent upon it, in any absolute sense; but we know enough about it to be profoundly impressed with the utter impossibility of any such combination resulting from chance. These little bones, with their muscles, ligaments, and attachments, are endowed with power to act without our will and knowledge, in adjusting the tension of the ear-drum to sounds of varying pitch; and, besides this, we seem to possess a measure of voluntary regulating power, which we find ourselves exercising when making an effort to distinguish one sound from another, or to detect some sound scarcely discernible.

Passing from the middle ear to the internal ear, which is placed in the cavities of the temporal bone,

we find a small irregular central cavity, just about large enough to hold a grain of pearl barley. Anatomists call this the vestibule, which is perhaps an appropriate name, yet it seems to be really the "central station," into which and out of which all messages must come and go. In front of it is the cochlea, and behind are the semicircular canals.

These canals are bony structures of unequal length, about one twentieth of an inch in diameter. Each one starts out from the vestibule, and making the larger part of a circle returns again, being enlarged at one end into what is called the ampulla, about twice the diameter of the other parts. The upper semicircular canal is vertical in direction, and stretches across the petrous portion of the temporal bone, forming by its arch a round projection on its front surface. It forms about two thirds of a circle. The posterior canal is also vertical and directed backward, nearly parallel to the posterior surface of the petrous bone. It is the longest of the three. The external canal is the shortest of the three, its arch being directed outward and backward. Thus each semicircular canal stands at right angles to the other two. Its ampullated end corresponds to the upper and outer angle of the vestibule, just above the oval window. Its opposite end opens, by a distinct orifice, at the upper and back part of the vestibule.

Within the vestibule of these bony semicircular canals is the membranous labyrinth, so-called, which

is a closed sac containing fluid. It has the same general form as these inclosures. The vestibular portion consists of two sacs, the utricle and the saccule.

The utricle is the larger of the two, and occupies the upper and back part of the vestibule. Numerous filaments of the auditory nerve are distributed on the wall of this sac, and its cavity communicates behind with the membranous semicircular canals by five orifices. The membranous semicircular canals are about one third the diameter of the bony canals, but in number, shape, and general form they are precisely similar. The membranous labyrinth is held in its position by the numerous nervous filaments distributed to the utricle, to the saccule, and to the ampulla of each canal. This little membranous arrangement is, in and of itself, a marvel of beauty. In fact, the bony canals and vestibule seem to be intended mainly for its support and protection. Its walls, though so delicate, consist of three distinct layers, the outer one of which is a loose vascular structure more or less colored, the middle one thicker and more transparent, or glassy-looking, while the internal layer is formed of nucleated epithelial cells in the form of polygons. This layer secretes a watery fluid having slight traces of albumen, but otherwise almost pure water, called the endolymph; while between the bony canals and the membranous there is also a limpid fluid, of similar composition, called the perilymph.

Thus do we find this wonderful little sensitive organ,

with its delicate nerve filaments, not only protected by a strong bony envelope, conformed accurately to its every curve, but even guarded from contact with its own covering by a liquid, ever changing and perfect in its chemical properties, while, within, there is the same delicate provision against any contact between the two surfaces of the sensitive epithelial lining. Did all this merely happen thus? Did blind chance place here in these secluded cavities and grooves of the temporal bone, well out of reach of harm, within a space not large enough to hold an ordinary kernel of corn, a structure so complicated that the grandest triumphs of art have never equaled it? Did some "appetency," or principle of "natural selection," or inherent "tendency to self-arrangement," cause the bony semicircular canals and vestibule to choose out this safe position, and the membranous labyrinth to choose these bony receptacles, and secrete the protecting perilymph and endolymph, and provide in the saccule and utricle the delicate little otoliths? To ask these questions is to answer them.

But we have not even yet reached the most wonderful portion of the human ear. The cochlea is the real *sanctum sanctorum* toward which all these other vestibules, aisles, door-ways, windows, and labyrinthine passages have been leading. It bears some resemblance to a common snail-shell. It forms the interior part of the labyrinth, is conical in form, and placed almost horizontally in front of the vestibule. The

point of this snail-shell is directed forward and outward. The broad open part rests upon, or corresponds to, the hollow at the bottom of the internal auditory channel, and has numerous little holes for the passage of a branch of the auditory nerve. It measures about a quarter of an inch in length, and its breadth toward the base is about the same. Like the ordinary snail-shell, it has a cone-shaped central axis. Two and one half times around this central axis, like a spiral, is wound a canal. Running through the center of this canal is a wonderful little partition of most delicate structure called the "lamina spiralis." This spiral is about an inch and a half in length, measured on its outer wall, and diminishes gradually in size from the base to the summit, where it terminates in a *cul-de-sac*, which forms the point of the cochlea, or snail-shell. The commencement of this canal is about one tenth of an inch in diameter. The lamina spiralis is the essential part of the cochlea, upon which the nerve tubules are distributed. This partition is bony about half way across the diameter of the spiral canal, and membranous or muscular the remaining half. The bony part consists of two thin plates, between which are numerous canals, for the passage of nervous filament, which open chiefly on the lower surface. The membranous part is a transparent, glassy structure, having a fibrous appearance.

The grooved margin of the bony part has upon its upper edge a finely-toothed membrane, called the

"zona denticulata;" and on its lower edge another of equal interest, called the "zona pectinata." Attached to this upper margin is also a fine layer of periosteum, called the "membrane of Corti." To the lower edge is fastened the basilar membrane; and upon this membrane rests the "organ of Corti."

Here we have a complete piano key-board, double, for there are two sets of these rods of Corti, and they are beautifully graduated in length, and have spaces between; so that, under the microscope, they present quite the appearance of a complicated key-board, and, with their varying lengths from base to apex so nicely representing the varying pitch, it really seems that here we have a *perfect* instrument of most exquisite design; and, while its intricate mechanism has thus far baffled the utmost skill of anatomical and physiological science, we know enough about it to convince us that it is most wonderfully adapted to its special uses. We know not exactly *how*, but we know that the ear actually *does* distinguish the pitch and quality of sounds.

Some may not be aware that all sound-waves can be mathematically measured, but such is the case. Harmonic tones are always multiples of fundamental tones. Every piano and organ is constructed mathematically. As far as anatomists have been able to determine, this wonderful organ of Corti, with its two thousand eight hundred keys, is constructed on the same strict mathematical principles. I cannot

here enter upon an explanation of the mathematics of sound, and must refer the reader to some one of the numerous works on that subject. Perhaps there is no better than that of Tyndall. It is surprising to note the scientific harmonies existing where least expected.

A recent author of considerable note, Rev. Samuel Haughton, F.R.S., in a work entitled *Principles of Animal Mechanics*, has quite clearly shown that even our ordinary muscles are formed geometrically, and act with mathematical precision. This remains yet to be proved, but I believe it *will* be; for it is in perfect accord with that love of order displayed in all God's works.

In this nice mathematical construction of the internal ear, as related to the mathematics of sound, we get a hint of the higher harmonies which may exist in the universe, all unheard by us. Human skill has brought musical instruments to a great degree of perfection, but in this space of the fourth of an inch we have a *register* of sound far excelling them all.

Still, its two thousand eight hundred keys seem to be graduated so exquisitely that they pass off into silence with the implied statement that there are finer sound-waves beyond.

Astronomers tell us that the harmonies of motion among the heavenly bodies are also in accord with these strict mathematical laws. If this be true, the poet's

"Forever singing as they shine"

becomes scientific fact instead of poetic fancy, and we may confidently expect to hear them sometime.

THE CIRCULATORY SYSTEM.

In looking for illustrations or revelations of God in the human body, perhaps the most natural tendency would be to examine the eye. At least this organ has been dwelt upon by nearly every writer on this and similar subjects, and still it has never yet been exhausted. But I purpose to pass it by, as being so manifest a revelation of infinite wisdom as to need no explanation, and invite attention to the circulatory system.

"The blood is the life." It is absolutely essential to the maintenance of the health, and even the existence, of the various tissues that it be conveyed to them constantly. Having imparted its life-giving properties, it is equally essential that it be carried away again. Not only to the limbs and larger muscles must it be thus carried, but even to the minuter structures, such as we have just been examining. The delicate little keys of our marvelous miniature piano must each and every one be supplied with blood. The little papillæ, only one two-hundred-and-fiftieth of an inch in diameter, as imperatively demand this life-giving fluid as do the largest structures in the body. How is this constant distribution effected? We answer, in a word, by the circulatory apparatus. But this is a complicated arrange-

ment, consisting of, 1. The heart; a hollow, muscular organ, which receives the blood at one orifice and drives it out, in successive impulses, at another; 2. The arteries; a series of branching tubes, which convey the blood from the heart to the different tissues and organs of the body; 3. The capillaries; a network of minute tubes, which are interwoven with the substance of the tissues, and which bring the blood into immediate contact with the cells and fibers of which they are composed; and, 4. The veins; a set of converging vessels, designed to collect the blood from the capillaries, and return it to the heart. In each of these four different parts of the circulatory apparatus, the movement of the blood is peculiar, and dependent upon special conditions.

The heart is the great central engine. It is a hollow organ, having four distinct cavities. It weighs about three quarters of a pound, in the average sized man, and is about as large as the fist. It looks like a very ordinary muscle when viewed externally, but on opening it we discover various special arrangements. A muscular partition divides it into halves so completely as to really form two distinct hearts; for there is no direct communication between the two sides. Each side is again divided crosswise; but this partition is not as complete as the other, for there is communication between the two ends. The upper end on each side—the broad end—is called the auricle. The lower end—the narrow, pointed end—is called the ventricle.

We discover that the muscular structure of the ventricles is much thicker and much firmer in texture than that of the auricles, and also, that the walls of the right ventricle are much thinner than those of the left.

We begin to think that this conical muscular mass, which presented such a commonplace appearance, was really constructed for a definite purpose. We examine the openings between the auricles and ventricles, and discover still more marked indications of the same. They are not simply unguarded openings, but beautiful valves so arranged as to permit the free passage of the blood in *one* direction, but so as to absolutely prevent its passage in an opposite direction. If now, we consider the heart in action, engaged in doing its work, we shall see more clearly the adaptation of the various parts to their respective uses. Suppose the vitiated blood, mixed with a supply of new material from the products of digestion and assimilation, to have been poured into the right auricle until it is fully distended. (We might start at any other point as well as here, for we are considering a completed circuit. But we will commence our view here.) The auricle contracts and forces the blood into the right ventricle, which just at this instant dilates and so helps the blood to enter, by a sort of suction force. Immediately on being fully distended, the ventricle contracts powerfully upon its contents; and now a large and most perfectly contrived and accurately fitted valve comes into operation. This is the tri-

cuspid valve; so called because it consists of three pointed parts, or segments. Each segment is composed of a triangular fold of membrane, having one side attached and the two others comparatively free. The attached edge, or border, is closely connected with the rim or margin of the wide opening leading from the auricle into the ventricle. The two other edges are directed toward the cavity of the ventricle, within which, indeed, the segments of the tricuspid valve are entirely placed. These two last named borders are not altogether free, but are fastened to the inside of the ventricle by little slender cords, which not only prevent the three segments of the valve from ever being thrown back into the auricle, but which, acted upon by certain short fleshy columns connecting them with the sides of the ventricle, assist, when the ventricle contracts, in spreading out the segments of the valve across the opening. The pressure of the blood in the contracting ventricle completes the closure of their margins, and thus that fluid is effectually prevented from making its way back into the right auricle.

Hence the stream of blood is driven into the pulmonary artery, and so, along the right and left branches of that vessel, into the lungs. The right ventricle now ceases to contract, so that the blood, just driven by it into the arteries leading to the lungs, would be forced back again, were it not for another valvular apparatus placed at the root or ori-

fice of the pulmonary artery itself. Here are three valves, called, from their shape, the semilunar valves. They consist of three folds of membrane shaped like half-moons, having one edge fastened along the line of union of the pulmonary artery with the ventricle, and the other border free, and turned in the direction of the interior of that vessel. When the artery is carefully cut open these little folds appear like pockets, or pouches, fixed to its sides. Owing to the direction of their free edges, these valves permit the passage of blood from the ventricle into the artery, but are speedily tightened out across the aperture of that vessel by any returning movement of the current; and then, meeting closely together at their free margins, completely arrest the backward flow. It follows, therefore, that the propelling force carries the blood on through the capillaries of the lungs. Arrived in the lungs, the dark venous blood undergoes a wonderful transformation.

Distributed through the capillary system of the lungs, there is nothing between it and the air except two very delicate membranes. Through these membranes the carbonic acid gas and other impurities of the blood readily pass outward, and the oxygen of the air readily passes inward, and soon the blood, which arrived here from the right ventricle dark and impure, becomes pure and of a bright scarlet color. It is now fitted for its life-giving functions, and through the pulmonary system of veins is carried

back to the left auricle, which receives it very much as did the right auricle until completely filled, when contraction takes place and consequent expulsion into the left venticle, which just at this moment dilates to receive it. Immediately this ventricle, which has the firmest, thickest walls of any portion of the heart, vigorously contracts, sending the blood with great force out through the aorta and on through the smaller arteries into the farthest extremities of the body and into every tissue. Substantially the same arrangement of valves as in the right ventricle prevents the blood from flowing back, except that they are two-pointed, instead of three, and larger in size, thicker, and in every way stronger than the tricuspid. At the orifice of the aorta are the semilunar valves. They are similar in structure, and in their mode of attachment, to those of the pulmonary artery. They are, however, larger, thicker, and stronger, and the fleshy columns which support them are firmer and more prominent.

Now, considering merely this one part of the circulatory system, mark the beautiful adaptations. In order that the heart be not a burden by reason of its weight, it must not be very large, and yet it must perform an amount of work almost incredible; namely, it must lift an estimated weight of twenty pounds at every beat, and must beat about seventy times per minute, on the average, for sixty minutes in each hour and for twenty-four hours in

each day, and not ask to rest for a single instant. This amounts to a lift of 84,000 pounds per hour, or 2,016,000 pounds per day. Hence we find it made up of the firmest kind of muscular fiber, so arranged as to occupy the least possible space for a given amount of strength.

At the broad end are placed the auricles, the receivers, which do not need to exert much force, and yet must have as great or even greater capacity than the ventricles. Moreover, this broadened portion is placed uppermost, so that the natural force of gravity may promote the inflowing of the blood, and the thin walls need not have this force to overcome when expelling the blood into the ventricles. By the aid of this judicious arrangement of the parts, only a very small portion of the whole weight of the organ need be given to the auricles, thus saving space and weight for the ventricles, which are compelled to exert great force.

Again, we notice that the right ventricle, which is required to throw the blood only as far as the lungs, is provided with but comparatively thin walls, and consequently, while having greater capacity than the left, does not constitute more than one third of their combined weight. Evidently here is the most careful husbanding of working power, and space in which to place it. The left ventricle has far more to do than all the other three cavities combined, and it has more muscular power and weight than all the others. It

alone is estimated to exert a force of thirteen pounds at each contraction, or nearly a thousand pounds per minute. It has power to send the entire blood supply throughout the body once in a minute and a half.

When we consider the beautiful arrangement of the tricuspid and mitral valves infinite wisdom is still more clearly exhibited. Ordinary valve structures could not be trusted in these important situations. Failure to open readily would cause the blood to be forced back into the veins, when the auricles began to contract, and the least failure to *close* with the utmost promptness, when the ventricles began to contract, would result in a flowing back of the blood into the auricles, instead of out to the lungs, from the right, and to the entire body, from the left. Any such backward flow greatly hinders the heart's action and produces the most distressing results, as seen when these valves become diseased. Hence the singular precautions taken to insure perfection of action and immunity from accident.

In the first place, there is seen a delicacy of structure rarely found elsewhere in the same sort of instruments. This renders them exceedingly pliable, and but slightly subject to congestion or inflammation.

Secondly, to insure their efficiency they are extended onward from their broad base a considerable distance into the ventricles, terminating in delicate open points, so that when the ventricle contracts the pressure not only readily closes these pointed

openings, but even presses together the sides all the way to the base, preventing tearing or folding.

Thirdly, lest these thin extensions of membrane should get floated out of place, beautiful columns and rings, or hitching-posts, are erected along-side, and the most minute, though sufficiently firm tendons, or tie-straps, called "chordæ tendineæ," securely hold them in place.

Fourthly, these valves are larger in size, thicker, and altogether stronger in the left ventricle than in the right, and the hitching-posts are heavier, and the tie-straps thicker and stronger—able to do the double work required of them.

Not only is the heart thus marvelously adapted to its intended purposes, but it continues to do its work without our direction or supervision—without even our thought. This may not appear to every reader as a matter of great consequence, for perhaps not every one has considered what would otherwise be the result. If the heart should cease to beat for one moment life would become extinct. If, then, our conscious thought were necessary to keep it at work we could never give our undivided attention to something else, or even permit ourselves to sleep for one brief moment. Moreover, this muscle, unlike the muscles of our body in general, not only acts without our conscious thought, or the direction of our wills, but continues to act even *against* the will. No man can stop his heart's beating at his

own dictation. Who can measure the frequency of suicides if this were possible? What multitudes of children in fits of willfulness would call a halt to existence!

But the same all-wise Creator who constructed this marvelous little engine of power and placed it in position, with every part perfectly adapted to its work, and set it in motion, gave it "power within itself," in a certain sense, to continue. At least he so ordered its mechanism as to make it independent of the direct will of the individual, leaving it subject only to the ordinary vicissitudes of disease.

The second part of the circulatory system—the arteries—presents many features of interest. Having an organ capable of throwing the blood to the utmost extremities of the body, the next requisite is a means of communication to every part which would never be closed. To meet this, considering the complexity of the body, and the varying positions in which it would be placed, and the varying pressures which would be exerted upon it, was no easy matter. But it has been accomplished most perfectly.

There are two systems of arterial circulation, the pulmonary and the systemic. The former, which pertains to the carrying of the venous blood to the lungs, will not be considered. The latter commences with the aorta, at the left ventricle, and extends to every part of the body except the hair, nails, cuticle, carti-

lage, and white of the eye. The tracing of this intricate maze would be full of interest, but we must content ourselves with a merely general view. It has been likened to the minute ramifications of a healthy, thickly branching tree, the aorta representing the trunk.

The larger arteries, in particular, have tough, highly elastic coatings, so that they are always open, and not only offer no resistance to the outward flow of the blood, but by their contractile force continue to urge it onward after the heart has ceased to contract. Furthermore, the larger branches in general pursue almost a straight course, thus helping on the flow. But in certain situations, where a too rapid flow might prove injurious to the delicate structures, their course is extremely irregular, and even tortuous; as, for example, in the internal carotid and vertebral arteries, previous to their entering the cavity of the skull. We also find that the larger branches of the arteries are not only well protected from injury and compression by muscles and fascia, and by being conveyed through grooves in the bones, but, as a rule, are placed on the inner sides of the extremities, and on the flexion side of the joints.

But, even with this careful arrangement, they must of necessity become compressed at times, and the flow of blood be temporarily stopped. To provide against any injury which might result from this stoppage, free communication is provided even among the larger

arteries, and this intercommunication becomes more frequent as they grow smaller.

It is also much more frequent between branches of equal size where great freedom and activity of the circulation are necessary, as in the brain. In the limbs they are most frequent around the larger joints, just where compression would be most apt to occur. The wisdom of this arrangement appears, not only in the ability to overcome these temporary arrests of the arterial flow to any given part, but also in the setting up of collateral circulation in case of some large branch having to be corded, or becoming impervious from disease. In this provision we have one of the most marked examples of that wise forethought of the Divine Architect which has provided even against the necessities of disease and accident, which he knew would be man's common lot. At least this is the way it appears to the writer. Some may fail to see any indications of design herein, or any revelation of the supernatural, and go on declaiming against the credulity of those who believe in God rather than in chance; but I leave it to the sober sense of the reader to decide wherein is found the greater credulity.

I wish now to call attention to the third department of the circulatory system—the capillaries. If we have found marvels of adaptation in the heart and arteries so great as to astonish us, the astonishment will be increased as we examine these little vessels,

which seem so insignificant. Useless would be the ingenious mechanism of the heart, so perfectly adapted to throwing the life-giving fluid throughout the body, or the wonderful net-work of arteries, as perfectly adapted to conveying it, were there not some means provided for using it, on arriving at any given part. It might flow on indefinitely through the tissues inclosed in the hard elastic tube of an artery and they receive no nourishment; but, continuous with the minute ends of the arteries on the one hand, and with the commencing rootlets of the veins on the other, are the capillary blood-vessels, which are very fine, hair-like tubes, that permeate almost every part of the body—every part, in fact, to which arteries are distributed—and bring the blood into intimate contact with the substance of the tissues. They vary somewhat in size in different organs and in different animals, their average diameter in the human body being a little over one three-thousandth of an inch. They are composed of a single transparent, somewhat elastic, membrane. As the smaller arteries approach the capillaries they constantly diminish in size, and lose first their external or fibrous coating. They are then composed only of their internal coat, and the middle, or muscular. The middle coat then diminishes in thickness until it is reduced to a single layer of muscular fibers, which in their turn disappear altogether as the artery merges at last in the capillaries, leaving only, as we have already observed, a

simple membrane, which is continuous with the internal arterial coating.

The capillaries are further distinguished from both arteries and veins by their frequent intercommunication. The arteries constantly divide and subdivide as they pass from within outward, while the veins as constantly unite with each other to form larger and less numerous branches and trunks, as they pass from the circumference toward the center. But the capillaries simply intermingle with each other in every direction, in such a manner as to form an interlacing network called the "capillary plexus," which is exceedingly abundant in some organs and very limited in others.

The spaces included between the meshes of the capillary net-work also vary in shape, as well as in size, in different parts of the body. In the muscular tissue they form long parallelograms; in the areolar tissue, irregular, shapeless figures, corresponding with the direction of the fibrous bundles of which the tissue is composed. In the papillæ of the tongue and of the skin they are arranged in long spiral loops. The movement of the blood in the capillaries may be studied by examining, under the microscope, any transparent tissue well supplied with these little vessels. The blood can be seen entering by the smaller arteries, shooting along through them with great rapidity, and flowing off again by the veins at a somewhat slower rate. In the capillaries themselves the

circulation is considerably less rapid than in either the arteries or the veins. It is also perfectly steady and uninterrupted in its flow. Its fluid portions seem to slowly soak through the walls of the vessels, and are absorbed by the tissues in such proportion as is requisite for their nourishment.

The blood in this way furnishes, directly or indirectly, all the materials necessary for the nutrition of the body. But just how this is done no one has ever succeeded in satisfactorily explaining.

It is an easy matter to attribute it to "chemical affinity," "appetency of tissues for their special nutriment," "inherent tendency," etc., etc., but in these very expressions is contained a confession of ignorance as to the exact power which performs the work, and the candid investigator finds herein a new revelation of that supernatural Being, whom materialistic science proclaims as an unknown God, and yet, however unwillingly, always bows down before at the last.

Dull, indeed, must be the sensibilities of that man who can gaze through the microscope and see the bright arterial blood coming out of the arteries and moving about in its promiscuous flow through the capillary system, giving out to the tissue its producing substances, and taking up the worn-out material until it becomes dull and murky in color and passes on into the veins, without becoming amazed in the contemplation of its mysterious movements.

Duller still must be the soul of that man who can carefully consider how the same fluid, sent bounding through the aorta from the left ventricle of the heart, goes on its way to every part of the body, and, as it enters the capillary system, gives up musculine to the muscles, osteine to the bones, cartilagine to the cartilages; and so on to every different part of the body just those elements which are needed for its growth and repair, and not be profoundly impressed with its significance.

No architect has ever yet succeeded, with all his appliances and practical skill, in constructing a human hair—so insignificant, and yet so full of wondrous interest when carefully examined. No textile artist, bringing to his aid every invention of every age, can weave such a fabric as covers the hand which writes these words, and every hand which may turn the pages of the completed book. No chemist, however patiently he may have experimented, or however perfect his laboratory, has ever yet succeeded in making an organic liquid the exact equivalent of any one of several which are constantly produced within this system. No combination of architects, artists, and chemists, bringing to bear upon their undertaking the concentrated thought and the accumulated skill of all the sciences of all the centuries, has been able to construct a muscle equivalent to the most insignificant of the five hundred, more or less, which have been constructed, and are daily renewed, through the service of these little capillaries.

The bone of your arm is broken. No surgeon, however skillful, can repair it. He can "set" it, but he will not engage to repair it, though you offer him uncounted gold. He knows his utter inability to do more than to give nature a chance to work. An unfortunate slip of some sharp-edged tool has laid open the flesh on your hand. You can stanch the blood, and bring the cut surfaces neatly together, and so apply adhesive plaster and bandage as to hold them there, but you cannot heal the wound. Now behold the superior power of these little indwelling repairers.

As the blood comes coursing along through the arteries into the capillaries, those in the broken bone say, "We must have an unusually large amount of bone material to-day, and for several days to come, since we have not only the usual wear to replace, but here has been an accident, and we must put in material to fix it up." And in due time they commence taking up the osteine in larger quantity than usual, and the fracture is made whole. The muscle which was laid open says to the same blood, as it courses around through the capillaries, "Here; my fibers are severed. My power is gone because my lifters are cut in twain; I must have a new supply of musculine." And in due time the capillaries go to work and take up this muscle-building material from the blood and place it deftly in the wound. At the same time the skin and underlying tissues have set up their special claims, and been made as good as new.

How has it all come about? Why did not the muscle-producing material find a lodgment in the broken bone, and the bone-producing material in the opened flesh? These capillaries had no eyes to see what was needed in each individual situation. And yet, no cut finger was ever healed by the insertion of bony material. No "peeled knuckle" was ever covered over with muscular tissue. No broken bone was ever repaired with mucous membrane. Why not? Why, in all the annals of surgery, have we no such case recorded? Let the denier of the supernatural answer!

He is mute, save as he undertakes to shield himself in a maze of meaningless verbiage. The theist hesitates not to say, Because the All-wise Creator endowed these little vessels with marvelous powers of adaptation and set them to perform their respective functions without any supervision from man, and hence did not need to explain the how. He finds herein such a revelation of God that his faith is continually strengthened, as he beholds the infinite skill of these humble servants of the Divine Builder. While his heart is warmed his mental view is enlarged, and he gains a completer conception of the All-wise designs manifested forth even in the humblest forms of physical structure.

Let us now briefly consider the fourth department of the circulatory system; the veins. Although they have not the surgical importance of the arteries,

nor the constructive power of the capillaries, their function is equally important, inasmuch as, unless it be properly performed, all else will stop. The blood having given out its life-supporting or constructive materials, and having taken up certain worn-out substances, must be returned to the center for renewal. For this return the veins are provided.

This might seem a comparatively easy task, but when the various hinderances to that return are considered, it appears a most difficult one. In all the lower parts of the body gravity is to be overcome, and in many situations pressure from without, and even muscular pressure, would tend to hinder the return. In consequence of the necessarily slower movement of the blood through the veins their aggregate capacity needed to be greater, and we find the need met by a more than doubled volume. This is the first element of adaptation we notice. Then also, the veins being more numerous, and having less elasticity, are more liable to temporary closures than the arteries, and would seem to demand more frequent intercommunication in order to permit the continuous inflow of the blood. This demand is fully met, not only by a much greater number of communications, but by actual collateral branches, thus rendering stoppage from pressure or disease practically impossible.

In the great resisting power given to the coatings

of the veins there is also a beautiful evidence of adaptation to actual use, as well as to emergencies which are constantly arising. We would naturally expect that, as they are very much thinner than the arterial coatings, their resistance to internal pressure would also be much less. But it has been found by actual experiment that, while they yield readily to external pressure, and when not filled become at once flattened completely together, they are capable of resisting much greater pressure tending to burst them than the arteries, with their elastic, unyielding walls. The iliac vein of a sheep resisted a pressure equivalent to over sixty pounds to the square inch. The portal vein withstood ninety pounds to the square inch, while the *vena cava* was not ruptured when a pressure of a hundred and seventy-six pounds was applied. Well did the Divine Architect know that under certain circumstances these little channels would be subjected to immense strain, and that the bursting of one of them would prove most serious; and so, notwithstanding their pliancy and apparent resistlessness, he gave to them a texture which seems incredibly powerful to resist rupturing force.

But the most characteristic and striking contrivance is found in the system of valves that exists in every vein, of any considerable size, which has any force of gravity to overcome, or is so situated as to be liable to any special obstruction. These valves

are little delicate, transparent, pocket-shaped folds of membrane, attached by their convex borders to the inside of the vein, but having their concave borders free, and turned invariably in the direction of the heart. Two, and sometimes, though rarely, three, of these valves are placed opposite each other, at certain intervals, along a vein. When, therefore, the blood is passing onward through such a vessel, the valves are separated from one another, thrown back against the inside of the vein, and offer no hindrance to the moving current. But when any obstacle, such as gravity, external pressure, or other resistance, prevents the onward movement of the blood, or tends to force it back upon the capillaries, the opposing valves quickly meet each other across the middle of the vein, and effectually hinder any backward flow. The instant that the obstruction is removed, however, the arrested blood moves on.

And now, although only a very brief descriptive outline has been given of a few of the wonderful structures of the human body, and their beautiful adaptations but imperfectly pointed out, I am persuaded that enough has been suggested to lead any unbiased mind not only to the fullest belief in design, but also to the profoundest admiration for the more than mortal wisdom herein so admirably revealed. Were it not for protracting this chapter beyond its proper limits, I should greatly enjoy directing the

attention of the reader to the marvels of wisdom displayed in the eye, in its setting, its lens, its coatings, its appendages, its humors, its intricate attachments, and its inimitable adaptations; to the hand and foot, those twin wonders of beauty and of use, whose intricacies of construction have called forth in their description the brilliant powers of a Fuller, a Galen, and a Sir Charles Bell; to the respiratory system, which in some respects is even more remarkable than the circulatory, the study and description of which have enlisted the best talent of the most advanced medical science without exhausting or even fathoming the subject, and whose wondrous mechanism grows more wonderful with every new discovery; to the various excretory organs, which, though but partially understood, are literally crowded with the most manifest evidences of adaptation to their specific uses; to the lymphatic system, of which even more might be said than of the capillaries; and especially to the nervous system. A whole chapter might well be given to it alone. Without this all the other systems would be of no avail, and every member, and organ, and tissue would be powerless. The eye, with all its nice adaptations, could not see without the retinal connection. The ear could not hear a sound, were not the delicate filaments of the auditory nerve distributed to those marvelous piano-keys, the rods of Corti. The hand could not act, the tongue could not taste, the lungs could not expand,

no muscle could contract, nay, even the most insignificant excretory processes of the body could not be carried on, without the constant assistance of the nerves. Yet what are they? A system of whitish cords starting out from the brain as the spinal cord, and sending off branches, which divide and subdivide until the most insignificant bone, and the smallest papilla, as well as the most important organ of the body, is supplied; an intricate and interlacing maze of whitish fibrous tissue connecting every part with the greyish substance of the brain, largely through the same greyish substance in the center of the spinal cord. The most powerful microscope has not revealed any essential difference in structure between the nerve of sight and the nerve of hearing, between that of touch and that of taste, between the nerves of special sense and the nerves of general sensibility. The most searching analysis concludes that the constituent elements of nerve tissue are the same in all situations. Every nerve is composed of minute nervous filaments, cylindrical in shape, varying in size, and running in a direction almost parallel with each other. In the spinal cord and the brain these ultimate filaments are smallest, having an average diameter of one ten-thousandth of an inch, as actually measured under the microscope.

Some of them are under the control of the will, and others are entirely independent of its influence;

and yet, as before stated, they cannot be distinguished from one another by any sort of examination. Now, although we cannot enter upon a description of the nervous system, however brief, the reader will readily see, from these few hints, that its intricacies of structure and arrangement far transcend all finite powers. Then let him take into consideration that, through all this intricate maze of ultimate filament, and branch, and ganglion, and trunk, each and every individual impression is carried with unfailing accuracy, so that we never mistake taste for touch, or sight for hearing; so that we never open our hand when we intend to shut it, or lift our foot when we intend to put it down; so that we always recognize the exact part of the body which is receiving injury, and do not defend the right eye when the left is endangered, and he cannot fail to agree with the writer that in the nervous system alone, were there no other sources of illustration, we have such a revelation of Infinite Wisdom as cannot be gainsaid by the most pronounced infidels.

And when we look upon the whole body, considering not merely the marvelous structure and adaptation of individual organs and systems, but also the harmonious adjustment of all the parts, we behold such a revelation as cannot be obscured by the wordy generalities, miscalled explanations, of the most skillful deniers of the supernatural; such a revelation as can be appreciated by the humblest, most unlet-

tered observer, and at the same time can afford satisfaction to the greatest intellects; such a revelation as tends to confound the skeptic, while it strengthens the faith of the believer, and leads him to exclaim, How wonderful, within even this tenement of clay, are the manifestations of thy Divine Wisdom, O my Creator and my Preserver!

"Of all the living tenants of the new-made world speech was given to man alone."—*Whewell.*

'Speech is the golden harvest that followeth the flowering of thought;
Speech is reason's brother, and a kingly prerogative of man
That likeneth him to his Maker, who spake, and it was done."

—*Tupper.*

"Language is the sensible portraiture or image of the mental process."—*Bacon.*

"Speech is the highest species of action."—*Zachos.*

"Thought in the mine may come forth gold or dross;
When coined in word we know its real worth:
Speech ventilates our intellectual fire;
Speech burnishes our mental magazine,
Brightens for ornament and whets for use."—*Young.*

"Language is the close-fitting dress of thought."—*Trench.*

"On words, on quibbles, if you please to call distinctions so, rests the axis of the intellectual world. A winged word hath stuck ineradicably in a million hearts, and envenomed every hour throughout their hard pulsation. On a winged word hath hung the destiny of nations."—*Landor.*

"For by thy words thou shalt be justified, and by thy words thou shalt be condemned."—*Christ.*

CHAPTER III.

IN HIS SPEECH.

The task to which the writer now turns is not that of describing the organs of speech and drawing therefrom an additional illustration of the divine. This would indeed be an inviting and fruitful theme; but there now opens before us the consideration of that wider problem of human speech which involves so many questions concerning the unity or diversity of the race, the origin of language, the divino-human character of articulate speech, and kindred inquiries.

If we succeed in showing that, as regards human languages, diversity of origin has never yet been proven, but that, on the contrary, every established philological fact at least seems to indicate unity of origin; and if, in addition to this, we succeed in showing that no other creature, however nearly he may approach man in the scale of animal being, has yet been found possessing articulate speech as man possesses it; and if, in the third place, we satisfy candid readers that, even if articulate speech has been discovered, evolved, or wrought out by man, he never could have accomplished it had he not been given special endowments therefor, we shall have furnished

an additional and a most satisfying revelation of God in man—not, indeed, a "demonstration of God's existence," but a *revelation* of that existence.

This inquiry will involve a somewhat extended survey of the science of language, or *philology*, but we cannot presume to make such survey exhaustive. Philology as a science, and particularly as bearing upon or becoming a part of the science of anthropology, has come into great prominence during the latter half of the present century. The volumes devoted to its treatment are numerous, and in many instances exhaustive.

The writer has made a prolonged and thorough study of the science, and would be gratified were it possible to give sufficient extracts from the leading authorities to indicate the exact position of each; but his space will not permit him, except in a few instances, to do much more than indicate conclusions. While condensing as much as possible, however, he will endeavor to give sufficiently extended quotations to be just to the authors cited, and hopes to avoid falling into obscurity in the effort to be brief.

There is great diversity of opinion upon many questions, and consequent diversity of treatment. Still, the more carefully one reads between the lines, and endeavors to get at the real intent of each author's words, stripped of all glosses and good-natured flings at opposing theories, the more nearly does he find them approach a common standing-ground on all

fundamentals. This is true of a large majority of the writers it has been my privilege to read. There are a few who are diametrically opposed to each other, and there is no mistaking the meaning of their bristling points and well-aimed thrusts. Much of the sharpest antagonism results from the bearing of this science upon the great moral and spiritual questions which confront us. This gives to it an interest far beyond what it could possibly possess were there nothing outside of the abstract questions of etymology and syntax, for this renders every thoughtful man interested in its investigation.

SECTION FIRST.

We enter first upon an inquiry as to the unity of the origin of languages. I certainly do not undertake to prove a common origin for all the families of human speech. This is neither necessary nor desirable. It is necessary for those who deny a common origin, and formulate theories resting upon that denial, to prove diversity of origin or confess the weakness and uncertainty of their premises. On them rests the burden of proof. Our thesis, as stated at the opening of this chapter, is sustained if we show that diversity of origin has never yet been proved; but that, on the contrary, every established philological fact at least *seems* to indicate unity of origin.

The human mind enjoys positive evidence. But in regard to many of the most important questions of

every-day life, as well as of philosophy, it must content itself with probable evidence.

If this be true in regard to every-day affairs, how much more emphatically true is it of those inquiries which reach back toward the origin of things, and, peering through the almost limitless darkness beyond all history, endeavor to seize upon and bring forth some satisfactory answer.

Much perplexity and confusion have arisen, concerning the question now in hand, from disregard of this simple principle. It has led, on the one hand, to dogmatism, to the asserting of premises as absolutely proven which have been only negatively established, and, on the other hand, to the disregard and even the denial of those facts which have been satisfactorily set forth. The disputant who asserts as proven that which is merely indicated betrays his weakness. The more stubbornly he asserts it the worse he will fare at the hands of a skillful opponent.

It would be gratifying to know just how the first talking was done—to understand, for example, how Adam named the various animals; but, alas! we are not informed. No proof can be gathered from any records, however ancient. The Bible is our earliest history; but our acceptance of the Bible as the infallible word of God does not advance us at all toward historic proof.

In this we are told that God "created man in his own image, and breathed into his nostrils the breath

of life," but we are not told exactly in what this image consisted. We are told that the first man was a "son of God," but are *not* told, as some theologians teach us, that God gave to this created son the fully developed language of later times. We are told that God brought to Adam the beasts of the field and fowls of the air "to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof. And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field;" but we are not told that Adam gave them the same names which they now bear, nor are we informed as to just what processes he passed through in the naming. And yet there are many well-instructed students of the Bible who charge us with infidelity to revelation when we refuse to admit that which revelation nowhere affirms; namely, that Adam was able one hour after his creation to pronounce words equal to a Chrysostom or a Webster.

Such believers are not genuine friends of revelation, for they heap upon it burdens which it was never expected to bear. By demanding too much for it they invalidate its genuine claims. On the other hand, those who disregard the instruction we really do possess concerning the matter, and set up the claim that man was left entirely to himself, in a state of absolute mutism, to stumble into articulate speech as best he might, get into such a maze of dif-

ficulties that all their fine-spun theories amount to only so much verbiage.

If, then, the question of the origin of language cannot be historically answered, neither can the question of its unity or diversity of origin. This being true, it becomes us to consider the various languages of the present time, and ascertain whether there are sufficient indications of a common origin to warrant us in affirming that diversity of origin has never yet been proven.

The method of procedure is very simple and straightforward. It is a method upon which all classes agree. We take any one of the numerous dialects, and, choosing some word in common use, enter upon an analysis thereof, strip it of its inflectional endings, and seek out its fundamental root. This root will, in almost every instance, be found to constitute the ground-meaning of several other words in the same dialect, and, in some instances, of very many. This leads to the grouping around that particular root of all the words of the dialect in hand which are found to have sprung therefrom.

Moreover, there will be found in this root the fundamental meaning of words in some other dialect. The next step, then, is to take up that second dialect and group together all the words therein which have this common or kindred origin. In process of continuing this search, and grouping of words, and bringing in of new dialects, we are soon carried outside of the mere dialectical differences found in the same

language, and discover that our fundamental root has sent its offshoots into some other and apparently quite distinct tongue. Having learned this, we commence the search among the various dialects of this second language, and soon have a greater or less number of them grouped around the same common center—greater or less number according as the language under consideration is either rich or poor in its dialectical ramifications. The discovery that two apparently quite distinct languages are thus closely allied leads to the conclusion that they perhaps had a common source, and prompts us to continue the search into yet other tongues. Soon our search is rewarded by finding a third branch from the primary root. The investigation becomes fascinating in the extreme as it is continued, and one after another of the varied languages, which had heretofore seemed separated as widely as the antipodes, is found to take its place in the family group and establish a clear relationship.

The details of this tracing back of the various and multitudinous dialects are, of course, too voluminous to be here given. A few brief references, culled here and there, must suffice.

For example, English words are readily traced back to their Anglo-Saxon origin. Then we find coming into the same the Low German, having taken up words out of the Dutch, and ultimately we find ourselves in possession of a comparatively few funda-

mental roots, out of which there seem to have sprung all the German and Dutch dialects, all Saxon, Frisian, and English speech, and some others of less note.

As we pursue this inward or backward movement, other elements seem to have entered, and, tracing these outward again, we soon take on the Swedish, Danish, Icelandic, and Norwegian languages. In the same manner, if we take the Muscovite and its kindred branches, we shall find coming into the same root-meanings elements from the Polish and its allied branches, from the Bulgarian, Servian, Lithuanian, etc.; and all of them ultimately appearing germinant in the same roots as the multitude of dialects formed from our English starting-point. Yet who would suspect that any relationship could exist between an English and a Polish word, much less between an English and a Servian!

Moreover, in the same manner we trace inward and then outward words from the Italian, the French, the Spanish, the Gaelic, the Portuguese, and many others. All these are found to coalesce, and to have root meanings in common. Then, carrying the same process farther, we find these numerous branches, although forming a great multitude of dialects, and even distinct languages, yet uniting again in one common family. For many years the union seemed to be delayed. There was a large class of languages in the Orient which appeared to stand by themselves, to

refuse to confess any relationship—the Bengali, the Hindi, the Zingari, the Hindustani, and others. But patient investigators continued to work upon the problem, and were at last rewarded.

I have said that philology, as a science, has come into special prominence only during the last half century, but it had its seers long before. As early as 1776 Halhed was struck with the similarity of Sanskrit to Western languages. He was an accurate student of many languages, and wrote a grammar of the Bengali, in which he declares himself amazed at the "similarity of Sanskrit words to those of Persian and Arabic, and even of Latin and Greek; and these not in the technical and metaphorical terms, which the mutation of refined arts and improved manners might have occasionally introduced, but in the main groundwork of the language; in monosyllables, in the names of numbers, and the appellations of such things as would be first distinguished at the very dawn of civilization." *

At a somewhat later period Sir William Jones wrote in his *Asiatic Researches* as follows:

"The Sanskrit language, whatever may be its antiquity, is a wonderful structure, more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs and in the forms of grammar, than could have

* *Grammar of Bengali*, by N. B. Halhed, Preface.

been produced by accident; so strong that no philologer could examine all the three without believing them to have sprung from some common source which perhaps no longer exists. There is a similar reason for supposing that both the Gothic and the Celtic, though blended with a different idiom, had the same origin with the Sanskrit." *

This declaration now sounds like a prophecy, as we read it in the light of discoveries made since it was written, and after having looked into the works of Humboldt, Bopp, and Schlegel, and the admirable Sanskrit and English lexicon of Wilson. Even more like a revelation does it appear when we read Schleicher, Victor Egger, MaxMüller, Farrar, and Breal, for the unity of all the Aryan languages is so clearly shown that it seems almost impossible to doubt its reality.

Many of these writers are hostile to Christianity, and take no pains to disguise their contempt for believers in the inspiration of Scripture, especially of Genesis; and yet we are perfectly willing to have them help us in the indirect defense thereof. I take unusual pleasure in quoting the following from Farrar in regard to the numerous families of Aryan speech:

"There is in all these languages a marked similarity of grammatical structure. Every one of them is strictly inflectional, and their inflections, whether

* *Asiatic Researches*, by Sir William Jones, i, 422.

they still continue to be numerous, or whether (as is the case with English) they have dwindled down to a very few, are all formed on the same method, and may all be demonstrably traced to the same original forms. . . .

"This similarity of grammatical structure in all Aryan languages is accompanied by an ultimate identity in the vast majority of roots.

"It is now a matter of simple notoriety that not merely in sounds and letters, but in fundamental radical structure, and not only in words which might conceivably have been borrowed from obvious natural sounds, but in words deduced through a long series of imaginative metaphors or fanciful analogies, the vocabulary of any single Aryan language, in spite of the effacing influences of time and the disturbing elements of foreign admixture, stands in a very close relation to the vocabularies of all the rest. The numerals, the pronouns, the most ordinary and essential verbs, the words for all the commonest relationships, for the parts of the body, for nearly all the domestic animals, for the most necessary cereals and the most familiar metals, are substantially the same in all the languages of this great family. That such is the fact may be seen by any one who will take the trouble to examine a few comparative lists; but it may be more interesting to observe that even when the words in several branches are different the roots of them all are to be found in the family possession, and that very

often when the words are as absolutely unlike each other as they can possibly be they can yet be deduced, through easy stages of differentiation, from a common original stock. . . .

"Since, then, the same grammatical principles, the same laws of structure, dominate throughout the Aryan languages, and since even when their apparent differences are most obvious it may yet be proved that there is a complete identity in their main roots, there can be no shadow of a doubt that the many peoples—including all the most powerful and the most celebrated which the world has ever seen—sprang within an almost historical period from one common stock. The epoch of their migrations from their common home cannot be determined with any certainty, but possibly it may not have been earlier than 2000 B. C. The most ancient name by which they called themselves, or rather the most ancient name of this race with which we are acquainted, was the name Aryas, a name derived from the root *ar*, to plow, and which therefore implied originally an agricultural as distinguished from a rude and nomadic race, and thus naturally came to mean 'noble.' It is true that this name belonged distinctly to the two great eastern branches of this family—the Iranian and Indian; but as they lingered the longest in the region of the primitive home, they are most likely to have retained the original name, and not only are traces of the same

root to be found abundantly in the other families of the race, but it is even believed that the beloved and familiar name of Erin is a far-off western echo of this primeval designation. As the name Indo-Germanic, which was originally proposed, is obviously too narrow and exclusive, and as Indo-European, which conveniently represents them by geographical area, is also too narrow for the universal and growing colonies which this race has founded even in the remotest islands of the Pacific, it is clear that Aryan remains at present the best name by which to call them. Their original home may be assigned by a multitude of concurrent probabilities. That it was somewhere in the vast plateau of Iran, in the immense quadrilateral which extends from the Indus to the Euphrates, and from the Oxus to the Persian Gulf, may be assumed as almost certain." *

In confirmation of this last thought, and in further extension of the same, I refer to two volumes by Louis Figuier; one entitled *Primitive Man*, published in London in 1870, the other entitled *The Human Race*, published in New York in 1872. The former is a work which marks the author as a man of large learning, and at the same time as one who refuses to accept the Bible account of creation, taking, as he does, the strongest possible ground for the great antiquity of the human race, saying, "The mind recoils dismayed when it undertakes the com-

* *Language and Languages*, by F. W. Farrar, p. 310, *et seq.*

putation of the thousands of years which have elapsed since the creation of man."

The latter is one of the most comprehensive examinations extant of the various races of men; and, looked upon in the light of the previous volume, his conclusions in regard to the unity of the human species, and the primary oneness of all languages, and his strong assertion of the correctness of the Bible in regard to the place of man's creation and the fact of his creation by God, have great weight. He says:

"We think that man had on the globe one center of creation; that, fixed in the first instance in a particular region, he has radiated in every direction from that point, and by his wanderings, coupled with the rapid multiplication of his descendants, he has ultimately peopled all the inhabitable regions of the earth.

"Around the central table-land of Asia we find not only the three fundamental types of the human species, but the three types of human speech. Does not this, therefore, afford ground for presumption, if not actual proof, that man first appeared in this very region, which Scripture assigns as the birthplace of the human race?"*

It is very cheering to the Christian student to find such substantial help in the writings of those from whom he has no right to expect it. It is equally satisfactory to find that those who accept revelation as we have it are masters of the situation, and capable of

* *The Human Race*, by Louis Figuier, pp. 6, 9.

bringing forth as rich treasures from the fields of scientific research as any of those who refuse to accept it. Dr. Daniel Wilson's work on *Prehistoric Man*, in two octavo volumes of four hundred pages each, devoted especially to the races of North America, throws the whole weight of his influence on the side of a common center of origin for all the multitudinous dialects and almost innumerable ramifications of human speech. He says:

"In the wondrous ramifications of language from a common center, it is difficult to limit the compass of its influences. When we find not only in the Muruya dialect of Australia *papute*, and among the Maories of New Zealand the simpler *pa* for father, and then recognize that among specimens of thirty different languages of the Malay archipelago given by Mr. A. R. Wallace, by far the larger number are variations of the Malay *bápa*, father, and *ma*, mother, and that the name re-appears in Polynesian vocabularies, it is seen to be a possible thing that the Sanskrit, the Malay, the Yarawa, and even the Muruya, *pa* and *ma* may, after all, have come independently from a common source. The Romans used *mamma* for the mother's breast. The Hindu and Persian *ma* bears the same signification; and wherever Aryan influence has prevailed the familiar roots re-appear. But they do also among the Tlatskani of Athabaska, the Tahalics of British Columbia, and many others of the savage tribes of the New World."*

* *Prehistoric Man*, by Daniel Wilson.

I cannot refrain from giving one more illustration of the substantial harmony of dialects apparently the most diverse, and the origin from a common root of words which have little or no apparent affinity. Let the reader take notice that the following long quotation is concerning a single root of four letters:

"Let us take the word *respectable*. It is a word of Latin, not of Saxon, origin, as we see by the termination *able*. In *respectabilis* we easily distinguish the verb *respectare*, and the termination *bilis*. We then separate the prefix *re*, which leaves *spectare*, and we trace *spectare* as a participial formation back to the Latin verb *spicere* or *specere*, meaning to see, to look. In *specere*, again, we distinguish between the changeable termination *ere* and the unchangeable remnant *spec*, which we call the root. This root we expect to find in Sanskrit and the other Aryan languages; and so we do. In Sanskrit the more usual form is *pas*, to see, without the *s*; but *spas* also is found in *spaśa*, a spy, in *spashta* (in *vi-spashta*), clear, manifest, and in the Vedic *spaś*, a guardian. In the Teutonic family we find *spëhôn* in Old High-German meaning to look, to spy, to contemplate; and *spëha*, the English spy. In Greek, the root *spek* has been changed into *skep*, which exists in *skeptomai*, I look, I examine; from whence *skeptikos*, an examiner or inquirer, or, in theological language, a skeptic; and *episkopos*, an overseer, a bishop. Let us

now examine the various ramifications of this root. Beginning with *respectable*, we found that it originally meant a person who deserves *respect*, *respect* meaning looking back. We pass by common objects or persons without noticing them, whereas we turn back to look again at those which deserve our admiration, our regard, our respect. This was the original meaning of *respect* and *respectable*, nor need we be surprised at this, if we consider that *noble*, *nobilis* in Latin, conveyed originally no more than the idea of a person that deserves to be known; for *nobilis* stands for *gnobilis*, just as *nomen* stands for *gnomen*, or *natus* for *gnatus*. 'With respect to' has now become almost a mere preposition. For if we say, 'With respect to this point I have no more to say,' this is the same as 'I have no more to say on this point.' Again, as in looking back we single out a person, the adjective *respective* and the adverb *respectively* are used almost in the same sense as special, or singly.

"The English *respite* is the Norman modification of *respectus*, the French *répit*. *Répit* meant originally looking back, reviewing the whole evidence. A criminal received so many days *ad respectum*, to re-examine the case. Afterward it was said that the prisoner had received a respite, that is to say, had obtained a re-examination; and at last a verb was formed, and it was said that a person had been respited.

"As *specere*, to see, with the preposition *re*, came to mean respect, so with the preposition *de*, down, it forms the Latin *despicere*, meaning to look down, the English *despise*. The French *dépit* (Old French *despit*) means no longer contempt, though it is the Latin *despectus*, but rather anger, vexation. *Se dépiter* is to be vexed, to fret. *En dépit de lui* is originally 'angry with him,' then 'in spite of him;' and the English *spite*, *in spite of*, *spiteful*, are mere abbreviations of *despite*, *in despite of*, *despiteful*, and have nothing whatever to do with the spitting of cats.

"As *de* means down from above, so *sub* means up from below, and this added to *specere*, to look, gives us *suspicere*, *suspicari*, to look up, in the sense of to suspect. From it *suspicion*, *suspicious;* and likewise the French *soupçon*, even in such phrases as 'There is a *soupçon* of chicory in this coffee,' meaning just a touch, just the smallest atom of chicory.

"As *circum* means round about, so *circumspect* means, of course, cautious, careful. With *in*, meaning into, *specere* forms *inspicere*, to inspect; hence *inspector*, *inspection*. With *ad*, meaning towards, *specere* becomes *adspicere*, to look at a thing. Hence *adspectus*, the aspect, the look, or appearance of things. So with *pro*, meaning forward, *specere* became *prospicere;* and gave rise to such words as *prospectus*, as it were a look-out, prospective, etc.

With *con*, meaning with, *spicere* forms *conspicere*, to see together, *conspectus*, *conspicuous*. We saw before, in *respectable*, that a new word, *spectare*, is formed from the participle of *spicere*. This, with the preposition *ex*, out, gives us the Latin *expectare*, the English *to expect*, to look out; with its derivatives.

"*Auspicious* is another word which contains our root as the second of its component elements. The Latin *auspicium* stands for *avispicium*, and meant the looking out for certain birds which were considered to be of good or bad omen to the success of any public or private act. Hence *auspicious*, in the sense of lucky. *Haru-spex* was the name given to a person who foretold the future from the inspection of the entrails of animals.

"Again, from *specere*, *speculum*, was formed, in the sense of looking-glass, or any other means of looking at one's self; and from it *specular*i, the English *to speculate*, speculative, etc.

"But there are many more offshoots of this one root. Thus the Latin *speculum*—looking-glass—became *specchio* in Italian; and the same word, though in a round-about way, came into French as the adjective *espiègle*, waggish. The origin of this French word is curious. There exists in German a famous cycle of stories, mostly tricks, played by a half-historical, half-mythical character of the name of *Eulenspiegel*, or *Owl-glass*. These stories were translated into French,

and the hero was known at first by the name of *Ulespiègel*, which name, contracted afterwards into *Espiègle*, became a general name for every wag. As the French borrowed not only from Latin, but likewise from the Teutonic languages, we meet there, side by side with the derivatives of the Latin *specere*, the Old High German *spëhôn*, slightly disguised as *épier*, to spy, the Italian *spiare*. The German word for a spy was *spëha*, and this appears in Old French as *espie*, in modern French as *espion*.

"One of the most prolific branches of the same root is the Latin *species*. Whether we take *species* in the sense of a perennial succession of similar individuals in continual generations, or look upon it as existing only as a category of thought, *species* was intended originally as the literal translation of the Greek *eidos* as opposed to *genos* or *genus*. The Greeks classified things originally according to *kind* and *form*, and though these terms were afterwards technically defined by Aristotle, their etymological meaning is in reality the most appropriate. Things may be classified because they are of the same *genus* or *kind*—that is to say, because they had the same origin; this gives us a genealogical classification; or they can be classified because they have the same appearance, *eidos*, or *form*, without claiming for them a common origin, and this gives us a morphological classification. It was, however, in the Aristotelian, and not in its etymological sense, that the Greek *eidos* was rendered

in Latin by *species*, meaning the subdivision of a genus, the class of a family. Hence the French *espèce*, a kind; the English *special*, in the sense of particular as opposed to general. There is little of the root *spaś*, to see, left in a *special train*, or a *special messenger;* yet the connection, though not apparent, can be restored with perfect certainty. We frequently hear the expression *to specify*. A man specifies his grievances. What does it mean? The mediæval Latin *specificus* is a literal translation of the Greek *eidopoios*. This means what makes or constitutes an *eidos* or species. Now, in classification, what constitutes a species is that particular quality which, superadded to other qualities, shared in common by all the members of a genus, distinguishes one class from all other classes. Thus the specific character which distinguishes man from all other animals is reason or language. Specific, therefore, assumed the sense of *distinguishing* or *distinct*, and the verb to *specify* conveyed the meaning of enumerating distinctly, or one by one. I finish with the French *épicier*, a respectable grocer, but originally a man who sold drugs. The different kinds of drugs which the apothecary had to sell were spoken of, with a certain learned air, as *species;* not as drugs in general, but as peculiar drugs and special medicines. Hence the chymist or apothecary is still called *speziale* in Italian, his shop *spezieria*. In French, *species*, which regularly became *espèce*, assumed a new form to ex-

press drugs, namely, *épices;* the English *spices*, the German *spezereien*. Hence the famous *pain d'épices*, gingerbread nuts, and *épicier*, a grocer. If you try for a moment to trace *spicy*, or a well-*spiced* article, back to the simple root *specere*, to look, you will understand that marvelous power of language which out of a few simple elements has created a variety of names hardly surpassed by the unbounded variety of nature herself. I say 'out of a few simple elements,' for the number of what we call full predicative roots, such as *ar*, to plow, or *spaś*, to look, is indeed small." *

I think there can remain little doubt in the mind of the reader that every one of the numerous dialects and languages commonly designated as Indo-European can be traced to a common source. Examples such as have been given might be multiplied almost indefinitely, were it not for wearying the mind with a repetition of that which possesses the same general characteristics. I do not claim to have proved that they all did actually have a common origin, but simply that every indication points that way. This is all that was attempted, and all that any fair-minded inquirer demands. It rests with our opponents—with those who contend for a diversity of sources—to prove the indications and probabilities which have been pointed out to be false or groundless. This they have not done. I am not

* Science of Language, p. 256.

aware that any of them have had the temerity to even attempt it. Some have raised objections to certain details, but they have amounted to very little. The whole process of tracing backward, and outward, and seeking vital connections, is so natural that it commends itself at once to every candid mind. It is almost as natural as starting at some small twig on one side of a great tree and tracing it inward until it is found connected with some other twig, and then following these on inward to still others, until combined they become a branch out of which proceed other twigs, which may appear very different, but which have the same kind of wood, and are fed by the same sap, which branch, still further inward, unites with others, all together at last forming the sturdy trunk, and terminating in a common root.

If, now, we take any one of the Old Testament words, any Hebraic word, and trace it back in the same manner, we shall find it approaching in formation other words of the same general speech, in much the same way as did the English word we first instanced in the beginning of this inquiry. The tracing is not as easy as in the former instance, but this is not surprising to any one at all acquainted with language study and language modifications. The reasons for the difficulty are numerous. The path over which we are traveling is a very old path, and greatly obscured by the accumulations of thousands of years. The words we are handling are unfamiliar

and strange-looking at the best, no matter how faithfully or long we have studied them. The language is emphatically a *dead* language. And yet we find every indication of the Hebraic branch uniting with the Aramaic; for, as we follow out this branch, its characteristics extend to every Aramaic dialect of which we possess any certain knowledge.

The Syriac and the Chaldee are the principal offshoots of this branch. The language of Syria and Mesopotamia, of portions of Babylonia and Assyria, is certainly full of interest. It is nowhere spoken in its original form to any great extent, but it is preserved in the literature of these lands; in a translation of the Bible called the Peshito, and also in the Targums, those most singular and yet very valuable paraphrases of the Bible. But most valuable of all are the cuneiform inscriptions which have been found in such abundance at Nineveh and Babylon. For many years these inscriptions seemed to baffle all attempts at deciphering, but Sir Henry Rawlinson succeeded with some of them nearly a half century ago, and ever since that time the work has been going on with gratifying success, so that we possess in these a rich fund of philological resources, as well as evidential. Every reader of George Rawlinson's *Historical Evidences*, and other kindred writings of more recent date, must have been impressed with this fact.

As these two branches are found to unite, we see the Arabic coming into this family. In fact, the

Arabic forms the greater part of the Semitic tree at the present day. It seems to possess something of the aggressive, absorbing power of the English language. It is a matter of current remark that wherever the English language gets a footing it either absorbs or pushes out every other language. This seems to be the nature of the Arabic. In the extensive conquests of Mohammedanism, during the sixth and seventh centuries, it played an important part. It soon became the language of the countries bordering on Arabia, and also the literary language of Palestine, Cyprus, and Egypt; and, through the power of Mohammed, and the extensive influence of the Koran, it absolutely displaced many of the dialects of Africa, and made a home for itself in many parts of Asia, and even in some European countries, for example, Spain and Sicily. As a spoken language, it possesses great vigor and terseness, while, as a written language, the fullness and variety of its grammatical forms, and the versatility of its conjugations, render it peculiarly adapted to the skillful presentation of any and all subjects.

It is a comparatively easy matter to trace every dialect, and every minute ramification of this language, back to the two ancient dialects, the *Himyaritic* and the *Koreishitic*, and these are readily found to be allied to the other two great branches above mentioned; namely, the Hebrew and the Aramaic.

Thus, then, we have another language tree, another family of languages, clearly made out; not with the fullness of illustration and amplitude of details with which the Aryan family was traced, nor yet with quite the unanimity of opinion among philologists, on all points, that was there found to exist, but with sufficient fullness, and such substantial accord as to give the Semitic family an undisputed place alongside the Aryan. Here we have, then, these two clearly defined language families or language trees. They are so clearly defined that there is no mistaking the one for the other. And yet the two trees which appear so unlike in trunks and branches, and even in their minutest twigs, and which disappear beneath the surface as perfectly separated trunks, may, after all, unite their roots together. Indeed, we have far greater reason to conclude that they do than that they do not. Comparisons between fundamental roots, or root forms, of the two languages have been instituted by many eminent philologists, and there is every reason to believe that the constituent elements which have entered into each family or tree are the same; that the basal forms are identical.

But there is another and a more perplexing problem yet before us. Even though the indications plainly point to a common source for all the members of these two families, there yet remain unconsidered the almost innumerable dialects spoken by

the tribes and peoples inhabiting the larger part of the habitable globe. This greatly complicates our study, and yet I believe the results may be made at least measurably satisfactory.

The languages of the two families thus far considered have usually been termed "organic" or "amalgamating." They represent the highest type of speech, wherein the fundamental roots, or basal forms, have so united in the formation of individual words as to lose their separate identity, or at least, so as to lose it in great measure. In consequence of this assimilation of roots and root forms we, by and by, have a language built up which is full of inflections and conjugations. This we have noted concerning the Semitic family, and found it even more emphatically true of the Aryan.

This highest type of language, represented in the Semitic and the Aryan, seems to have supervened upon what has been termed an "agglutinative" stage. We find all through philological treatises the terms "agglutinative languages," "process of agglutination," etc. This is an apt designation, having for its root, as is readily seen, our word "glue," and the terms are applied to that type, or stage, in language, wherein the fundamental roots, or root forms, have not yet reached the more perfect inflectional type, where, the roots having become perfectly assimilated, the changes of meaning are indicated by inflections; but where these roots seem simply to have "stuck

together," each retaining in some sense its individuality, while giving up something of itself to the other, and so making a new word with a modified meaning. Every language between the primitive root type and the perfected inflectional type partakes of this character, and may properly come under the designation "agglutinative."

As before stated, the languages spoken by the peoples spread over the widest extent of territory are in this stage, and they constitute by far the largest number. These peoples are the wandering, nomadic clans and tribes of Europe and Asia.

The name commonly given to all these "agglutinative" dialects is "Turanian," and I shall speak of the "Turanian family" of languages as the third member in the group, or the third language tree, which we desire to trace in and out as we have the Aryan and the Semitic. Because of the fact just stated, namely, that the languages represented in the Turanian family *were* and *are* the speech of wandering peoples, for the most part, we cannot expect our pathway to be as clear and unbroken as in the Aryan, nor even as in the Semitic. Still, I think we shall not find it untraceable.

Suppose we take for example some word in common use among the Laplanders, away up in the northern part of Europe, and some one in common use among the Esthonians, who inhabit the islands in the Gulf of Finland. (I will not burden these pages or

perplex the reader by writing out the forms used in these strange languages, for the method of the tracing can be made equally plain without it.) As we look at the words they seem to have nothing in common, and yet a separation of their constituent parts shows us an intimate relationship with other words in the same languages, and we go on making discoveries of these relationships until we find the two dialects taking on many common forms. Then, using these kindred forms as a starting-point, we can trace their progress, as they take on other roots, or, as the philologists would say, as they go on "agglutinating," until we find the Tavestian and Karelian dialects fully made out. Ultimately we are able to trace a relationship more or less distinct between the numerous languages spoken by the nomad peoples composing the Finnic tribes all through the northern part of Europe and north-western Asia, and even south as far as Constantinople.

Pursuing the same manner of inquiry in regard to representative words in use by the cultured Osmanli, or followers of Osman, heard in the polite circles of Tripoli and Tunis, or anywhere throughout the wide stretches of country over which the conquests of this tribe extended, and we reach the same conclusion concerning the substantial relationship existing among all the Turks and their allies, from Siberia, on the north, to the Indo-European provinces on the south, and from the river Lena, in the extreme north-east,

to Africa and southern Europe on the south-east. I do not mean to say that these affinities are always plain, but I am quite sure that any one who will be at the pains to examine the copious illustrations of their relationship, as they are made to appear in the more comprehensive treatises on this subject, will be fully convinced that they are not theoretical or imaginary, but actual, affinities. Nor need he be a reader or speaker of the Turkish language in order to distinguish these marks of similarity. Personally I have no knowledge of any of the dialects of this language, cannot read a sentence without a lexicon, and yet I can see very clearly by a few hours' study of a Turkish grammar that it is a language of no mean importance, and that its alliances with others cannot but be numerous and close. Their alphabet contains thirty-three letters. Twenty eight of these were taken directly from the Arabic, and four from the Persian, only one being native Turk.

Their grammar is surprisingly complete, and at once indicates a language of great resources. The verb, for example, is thrown into such a variety of forms as to express all shades of meaning, there being seven *species* or *genera—active*, *passive*, *causal*, *reciprocal*, *negative*, etc.—and besides all these, additional provision is made for a more complete expression of the subjunctive, conjunctive, optative, and potential moods by "gluing on" certain particles. In various ways it runs out into and borrows from the

languages belonging to the Aryan and Semitic families with which it has come into contact.

The same tracing process pursued with words of the Mongolic dialects, spoken by the Kalmüks and Dürbets, or any of the tribes from China to the Volga, brings out similar evidences of relationship among all of them.

And so of numerous other branches of this great and widely scattered Turanian family; as the Malaic, the Tamulic, and the Samoyedic. Having made out these various branches, the next step is to discover sufficient similarity among them to warrant us in placing them together in one common family.

Some authorities object to thus grouping them, because the relationship here established is not as clearly shown as among the various branches of the Aryan and Semitic. In raising this objection they reveal either a lack of appreciation of the real nature of the question, or a disposition to be captious. Any one disposed to look at the matter fairly, and having a full appreciation of the problem, would not for one moment expect to find the same niceties of family likeness between the Finnic and Mongolic branches of the Turanian as between the Scandinavian and German branches of the Aryan, or the Aramaic and Hebrew branches of the Semitic. He would understand that the ruder the forms of speech the less fixed they are, and the more readily do they take on new forms under changed conditions; and that these new

forms, taking to themselves still newer and more strange agglutinations, would come to have very little the appearance of the original.

Now, all, or nearly all, of the branches of the Turanian family are made up of these ruder forms, these agglutinative dialects, and the difficulties which meet us only help to prove the genuineness of the results reached.

The immense number of apparently irreconcilable differences which philologists have succeeded in reconciling, and especially the very substantial progress made in this direction within recent years, leads us to believe that in due time all will be made plain, and the Turanian family be as fully recognized as are the other two at the present writing.

This much we can even now assert, without fear of successful contradiction, that the plainly shown evidences of similarity are sufficiently numerous to invalidate every objection yet brought against Turanian unity. This in itself leaves us on vantage ground up to the present hour, and this is sufficient.

Having, then, all the known languages of the earth grouped into three families — Aryan, Semitic, and Turanian—our next inquiry is, Have these three families any thing in common? This question has received many answers—answers about as various as they are numerous.

In the multiplicity of authorities on the subject one scarcely knows whence to choose. But after a

somewhat diligent examination I have arrived at the conclusion that certainly no one of those who deny that they have any thing in common has substantiated that denial by any evidence which is even approximately complete. Several claim to have done so, and almost bewilder us with examples of the "numerous," "insurmountable," "unexplainable," "ineradicable," and all other terrible differences which exist between them; but the claim, notwithstanding the good rhetoric and the weighty words which are brought to its support, amounts in the last analysis to only a skillful pointing out of the fact that each one of these families possesses much that is peculiar to itself; that each one is in a very marked degree *sui generis*.

But this we all admit, and that gladly; for it increases, rather than diminishes, the indications of primary unity. It is decidedly amusing to observe the herculean blows which have been expended upon such a man of straw.

No objections to the theory of a common origin for these three families of speech having been proven to be valid, we may at least consider the question an open one, and look for the indications of a common origin. In the first place, we find that all languages are, in a certain sense, progressive, and if any thing becomes plain from a careful examination of the Aryan languages, in their inflectional or highest stage, it is that they may have once been in the

agglutinative or lower stage, even as the agglutinative may have once been in the radical or monosyllabic stage. Secondly, we find certain fundamental roots, certain basal forms, in the Semitic which look a little like and have meanings very much like certain fundamental roots in the Aryan. Thirdly, we find, in some of the Turanian forms, a significant sort of progression toward the Aryan forms, and in a few instances what appears to us to be an actual passing over into the Aryan. Fourthly, we discover an intermingling of the three families, especially of the Semitic and Aryan, and even the taking on of certain Aryan features by the much-despised Turanian.

Now, in the absence of any proof to the contrary, we submit that these facts, which lie upon the very surface, may be justly considered to be exceedingly strong indications of unity of source. And if, with the necessarily meager acquaintance the most advanced philologists as yet have with the languages of the earth, so many facts point to a single source from whence all languages sprang, may we not reasonably expect that every fact added to our present stock will point us thither still more clearly? I believe we may, and consider myself warranted in affirming, at the close of this section, that my initial proposition is sustained; namely, that diversity of origin has never yet been proven, but that, on the contrary, every established philological fact at least points toward, and seems to indicate, unity of origin—one single source.

SECTION SECOND.

Having thus, as I believe, shown conclusively that, as far as philological science has arrived at well-established data, these data all point to a common origin for all the languages of the earth, and having certainly shown that no one has proved diversity of origin, I proceed to inquire whether any other earth-born creature besides man has the faculty of speech. To any one unaccustomed to reading the deliverances of "advanced science" such an inquiry would perhaps seem unnecessary; for speech has from time immemorial been considered a distinctive characteristic of the human species. Down to the time of John Locke this fact was considered so undisputed that it was assumed as an established premise in argument. He says: "This I may be positive in, that the power of abstracting is not at all in brutes, and that the having of general ideas is that which puts a perfect distinction between man and brutes. For it is evident we observe no footsteps in these of making use of general signs for universal ideas; from which we have reason to imagine that they have not the faculty of abstracting or making general ideas, since they have no use of words or any other general signs. God having designed man for a sociable creature made him not only with an inclination and under a necessity to have fellowship with those of his own kind, but furnished him also with language which

was to be the great instrument and common tie of society." *

But in later years, as physical science has advanced in its triumphs, and naturalism has come to assert its absolute sway and demand the entire exclusion of every thing supernatural, it has been thought necessary to show that articulate speech is only a development, or a result of natural selection, and hence that it does not constitute a truly human distinction, because its germinant principles are possessed by brutes, and it really came through brutes to man.

Charles Darwin, in his truly interesting and, in many respects, valuable work, entitled *The Expression of the Emotions in Man and Animals*, published in London in 1872, enters into a most comprehensive citation of incidents and illustrations to show, among other things, that man is not the only talking animal. He states many facts which are well known to every careful observer of the animal creation, and brings to view many which, though essentially known before, are comparatively new, and presents the whole in such chaste and earnest style as to lead the uninformed reader to the acceptance of a theory which rests, not upon the facts he so clearly and beautifully states, but upon the half-truths and assumptions which he clothes with equal beauty of language. I must not indulge myself in any formal

* *Essay Concerning Human Understanding*, by John Locke, Gent, vol. i, book iii, p. 427.

refutation of this book, for this would involve quotations therefrom for which space cannot be spared; but it would be an easy task to show its utter lack of conclusiveness, and to demonstrate that materialism has gained from it nothing substantial. The same is emphatically true of his earlier work, published in 1868 in two large volumes, entitled *The Variation of Animals and Plants under Domestication*, which, as before stated, tends strongly to confirm the belief in one single source from which language sprang; thus affording another illustration of that which is often found, namely, that a treatise by some learned author confessedly opposed to evangelical religion, which signally fails to substantiate the positions taken against the truths of revelation, positively assists the truth in other departments.

Several other learned treatises, bearing either directly or indirectly upon this subject, written by some of the foremost disciples of Darwin, and the most enthusiastic champions of natural selection, evolution, survival of the fittest, etc., which it has been my privilege to read, I have found to contain similar unbridged chasms, the same lack of logical sequence in inference and conclusion, and the same disposition to beg the question by taking for granted that which remained to be proven. In none of them have I found the slightest evidence of the possession by brutes of the real faculty of articulate speech. In those instances wherein it seemed to be such, or

wherein an elaborate effort was made to cause it so to appear, it was clearly the merest imitation—some parrot like performance which proved nothing to their purpose.

Max Müller has well said, "Man speaks, and no brute has ever uttered a word. Language is something more palpable than a fold of the brain or an angle of the skull. It admits of no caviling, and no process of natural selection will ever distill significant words out of the notes of birds or the cries of beasts." And in the same general line of thought we find the learned and carefully conservative Pressensé saying:

"There is not a single proposition which does not imply a judgment; and judgments in their sequence are the manifestations of the natural logic of the human mind. Reason, then, is the very soul of language. Is there any thing at all analogous to it in the cry or the instinctive sign of the animal? Is there any thing in that cry which implies abstraction, generalization? It does nothing more than express a sensation, or at most that totality of sensations susceptible of a certain development which constitute a want; it never goes further. Man, on the contrary, at once gets beyond sensation, want; he goes out of himself, and names and characterizes the object of his perception; he knows it, and makes it known. We thus arrive at a second characteristic of speech. The inferior language of the animal is purely subjective, sensational, if we

may so say. It has attained its end when it has expressed that which the animal feels; it attempts no more. When insects concert and understand one another by signs, it is always in order to obtain that which instinct requires, or to escape some impending danger. Man, on the contrary, even under the pressure of sensation, fixes on the object which has excited it, names it, and thus rises above the mere sense-impression to knowledge. To speak is to know. Soon he is no longer content to designate the object of his knowledge simply because he dreads or desires it; he obeys a nobler impulse—he seeks to know it for itself, impelled by a higher need born of and developed with his reason."

It is sometimes objected that some men have not as much intelligence as some brutes. We grant it. But this is not the question now under discussion. The inquiry is rather qualitative than quantitative, one of kind rather than one of measure. The bird or the beaver doubtless knows more, in a certain sense—has more intelligence, in a certain sense—than the child or even the youth, but it is not that reasoning faculty which generalizes, and which leads to the expression of abstractions in articulate speech. Hence, it is legitimate for us to argue from the fact of such expressions to the possession by man of that sort or kind of intelligence, or reason, which the brute does not possess, and which separates, distinguishes, differentiates him from all the brute creation. In *Chips*

from a German Workshop, by Max Müller, published in 1875 in four volumes, containing a veritable mine of philological wealth, we find the following strong statement bearing upon the thought just presented:

"We see to-day that the lowest savages, men whose language is said to be no better than the clucking of hens or the twittering of birds, and who have been declared in many respects lower even than animals, possess this one specific characteristic, that if you take one of their babies and bring it up in England it will learn to speak as well as any English baby; while no amount of education will elicit any attempts at language from the highest animals, whether bipeds or quadrupeds." And again we hear him say in well-put phrase: "Language is the Rubicon which the animal never crosses, because it reveals a direct operation of reason; it is reason expressed, just as reason is unexpressed language."

Nor is it merely on this psychological ground that we postulate the inherent difference between human and brute language, for, as Pressensé says: "Human speech, whether as making the reason fully conscious of itself, or as manifesting it in articulate words, differs altogether from the language of animals, which is one of mere corporeal signs. We do not mean to imply that there is no relation between the two. With regard to speech, as to his whole existence, it may be said that man begins by the instinctive, only there is in man, in a virtual state,

something more than instinct—an element of higher life not to be developed from instinct alone by mere evolution, but which, coming from a higher source, will in the end transmute instinct into something higher. Man begins, indeed, with a cry, the corporeal sign, but he does not stop there, and rational speech is not the mere perfecting of the cry which was wrung from him by his first infantile sorrows. Neither the cry nor the interjection contains the principle of abstraction, of generalization, of reasoning, inherent in true human speech." *

These several positions are well taken. The objection may be urged, however, that the authorities here cited are committed to Christianity, and would very naturally contend against every hypothesis which, if substantiated, would prove antagonistic thereto. This objection is not a worthy one, for it assumes a sort of inwrought dishonesty, and, if granted, invalidates all argument to some extent, lying against one party as strongly as against the other: and yet it has its weight; hence I now desire to look into the writings of those who are not supposed to have any bias in either direction.

In the progress of a somewhat extended argument, Professor W. D. Whitney says: "It is well to point out here that this change of the basis of men's communication from natural suggestiveness to mutual understanding, and the consequent purely con-

* *A Study of Origins*, by Edmund de Pressensé, p. 315.

ventional character of all human language in its every part and particle, puts an absolute line of demarkation between the latter and the means of communication of all the lower animals. The two are not of the same kind any more than human society, in its variety of organization, is of the same kind with the instinctive herding of wild cattle or swarming of insects, any more than human architecture with the instinctive burrowing of the fox and nest-building of the bird, any more than human industry and accumulation of capital with the instinctive hoarding of bees and beavers." *

It is immaterial to our present purpose that we cannot agree with the writer in the conclusions he draws from the argument, a part of which we quote. Our only purpose is to show that whatever weight it may have in the determining scale of our present inquiry must be placed upon our side.

Another accepted authority on philology—accepted, I mean, by those who lean toward the materialistic side of all these questions—is Edward B. Tylor, F.R.S. His work, entitled *Researches into the Early History of Mankind*, is one of much worth, indicating great erudition and careful research, taking up in successive chapters "Gesture Language," "Gesture Language and Word Language," "Picture Writing and Word Writing," "Images and Names," and so on through the whole progressive history of early

* *Encyclopedia Britannica*, article "Philology."

man. He is thoroughly non-committal upon most points touching the question of theism, although evidently not a true theist, and yet he very clearly shows that articulate speech is a distinctively human exercise. I would not be understood as holding the authority of a writer of this class in higher estimation than that of one who is a pronounced believer in the supernatural, and an avowed champion of the divine human theory of language; but it is quite refreshing to find so many of our supposed opponents wheeling into line with us on some one phase of our inquiry.

Sir John Lubbock, in his *Origin of Civilization and Primitive Condition of Man*, takes substantially the same position. *Prehistoric Times*, already noticed in these pages, has given him a world wide reputation as an advocate of the immense antiquity of man, and there can be no question, in the mind of any one who has carefully read his writings, as to his unqualified disregard of a written revelation; and yet he says:

"Although it has been at various times stated that certain savage tribes are entirely without language, none of these accounts appear to be well authenticated, and they are *a priori* extremely improbable. At any rate, even the lowest races of which we have any satisfactory account possess a language, imperfect though it may be, and eked out to a great extent by signs. I do not suppose, however, that this custom

has arisen from the absence of words to represent their ideas, but rather because in all countries inhabited by savages the number of languages is very great, and hence there is a great advantage in being able to communicate by signs."

He says this in full view of facts the most ample going to show the degraded condition of many savage tribes, and the apparently almost brainless condition of some of the individuals thereof; for it would seem that he himself has ransacked every possible source of information concerning the habits and customs of all the uncivilized races to whom access could be had.

In addition to his personal observations, he has evidently read nearly every thing that was ever written concerning the observations of others. He quotes approvingly from *Travels in Brazil*, by Spix and Martius; from *Tropical South Africa*, by Galton; from *Scenes and Studies of Savage Life*, by Sproat; from *Indian Tribes of Guiana*, by Brett; and several other volumes, all of which exhibit the lower types of mankind in their lowest aspects. And yet, notwithstanding all this, so strong are the evidences of an inherent difference in *kind* between the very lowest forms of articulate speech and the very highest of brute signs that he goes even further, and says:

"Signs may serve to convey ideas in a manner which would probably surprise those who have not

studied this question; still it must be admitted that they are far inferior to the sounds of the voice; which, as already mentioned, are used for this purpose by all the races of men with whom we are acquainted.

"Language, as it exists among all but the lowest races, although far from perfect, is yet so rich in terms, and possesses in its grammar so complex an organization, that we cannot wonder at those who have attributed to it a divine and miraculous origin. Nay, their view may be admitted as correct, but only in that sense in which a ship or a palace may be so termed: they are human in so far as they have been worked out by man; divine, inasmuch as in doing so he has availed himself of the powers which Providence has given him."* Which is putting the case about as strongly as we could expect from Sir John.

This is perhaps a sufficient citation of authorities, although in this field it is well always for a writer to give the results of others' investigation as a proof of his own positions.

Mere dogmatism or preconceived theories should weigh little in a discussion of this kind. But here we have before us the declarations of the most eminent philologists of almost every phase of belief as to revelation, and there is substantial agreement in this one opinion—that no other creature possesses articulate speech.

Having shown this general consensus of opinion

* *Origin of Civilization and Primitive Condition of Man*, p. 277.

among writers of note on this subject, it is proper for us to inquire if this is not in accordance with our race instincts, or intuitions. Take any man or any class of men—those who have never considered questions of ethics, or philology, or history; and who have no theories of morals or religion to support—and would they not be surprised to hear some lower animal speak as man speaks?

To ask the question is to answer it. There is a general conviction among men that speech is something which belongs to no other creature. I would not be understood as setting forth this fact absolutely conclusive, but it has its weight, as it accords with all the historical indications which have been produced, and thus becomes in a certain sense confirmatory. I would not be understood as claiming to have proved, or as attempting to prove, that there may not have been, at some time or at some place on this earth, a race of beings, not human, who possessed the power of articulate speech, any more than I would undertake to prove that there are not inhabitants upon the other planets.

But it rests with our opponents to show that there *have* been such, and until they do they have no right to demand of me a belief contrary to every ascertained indication, and contrary to my own intuitions. Nor would I have it understood that I wish to rob the brute creation of one iota of its claim to intelligence, in denying to it the power of speech; and yet

I feel a little as Sydney Smith must have felt when he said:

"I confess I feel myself so much at ease about the superiority of mankind, I have such a marked and decided contempt for the understanding of every baboon I have ever seen, I feel so sure that the blue ape without a tail will never rival us in poetry, painting, and music; that I see no reason whatever that justice may not be done to the few fragments of soul, and tatters of understanding which they may really possess."

"Man is man only because he speaks; but he could not have spoken if he had not been already man," said the illustrious Humboldt, and we have yet to find a successful contradiction of the declaration.

SECTION THIRD.

The third and last question of this chapter is one on which there has been more serious disagreement, but which we confidently believe admits of an equally satisfactory answer.

Could man have become possessed of speech, either by discovery, evolution, or art, had he not been given therefor a special endowment? We do not ask whether God gave to our first parents the full-fledged speech of later years, in the same manner as we might suppose some supernatural power to suddenly endow an adult mute with the

ready utterance possessed by some gifted orator. There may, and doubtless do, remain, in some circles, a few of those visionaries who believe that God did thus present to Adam and Eve in the garden a complete grammar, rhetoric, and dictionary combined, and gave them entire and immediate mastery thereof; and no doubt these people consider themselves the only orthodox believers in the Bible account of creation. But every one should know, and doubtless every one who will read such a volume as this does know, that the Bible not only does not teach any thing of the sort, but does not even permit any such inference to be legitimately drawn. Such visionaries freely charge those who would look for a gradual growth and development of language with infidelity to revelation, while they are themselves the real enemies to Bible truth, because they heap upon it unnecessary burdens.

On the other extreme is a large class of men who deny the divine element in all creation, even the creation of man, and who, of course, profess to see nothing in human speech above a mere natural growth. With these extremists we have no desire to argue, for they have been shown in previous chapters to be either incapable of appreciating the force of an argument, or unwilling to admit the truth when convinced. But to these there seem to have joined themselves many naturalists and philosophers who profess to have faith in the supernatural,

but refuse to admit that it has any place in human speech.

The previous section has, in some measure, shown the absurdity of such refusal, but we need to look into the question of the origin of language a little more fully.

As regards actual *possession*, the proof is sufficiently clear that articulate speech belongs to man alone of all earthly creatures. This simplifies the present question to a considerable degree, for the fact that man, and man only, thus expresses himself proves that he, and he alone, possesses the language power. This fact being established, not only is the field narrowed to the study of man, but the object of our study is shown to be entirely separated from the brutes by at least one distinguishing mark.

Again, it was shown in the first section of this chapter that all languages can be traced inward to a comparatively small number of fundamental roots. In fact, all philologists agree upon this much, no matter how diverse their views upon other points. Having, then, all languages traced back and reduced to these basal forms, we have no longer the wonderful fabric of perfected speech to account for, but merely its primary elements, merely these uncouth roots. But they are full of interest. Whence came they, and how? It is sometimes more interesting to study the beginnings of a process than its completion. It is often more difficult also.

It is a comparatively easy matter to trace back the full-fledged bird-of-paradise to the egg, and even within the egg, to the germ; but *whence* and *how* the life in the germ? I suppose it would have been just as easy for God to have created the bird full-grown as to have created the elemental germinant speck in that egg. Let us lay aside our raptures over the beautiful plumage, and the graceful movements, and the wonderful growth, from an uncouth fledgeling just out of the shell up to this vision of perfection, and calmly study the primary elements. I think we shall find that just as in the egg, just as in all animal life, we reach a point back of which we cannot penetrate, however perfect our science or however complete our processes, even so is it in language. Naturalists may talk stiltedly and write learnedly about protoplasm and bioplasm, but at the last they are obliged to confess an unexplained beginning, except only as the Bible explains it. Likewise, philologists may talk fluently and write voluminously about onomatopœia and the progressive power of interjections, may trace every known word to its fundamental root, and all roots to a few fundamental forms, but at the last they are obliged to confess an unexplained beginning, except only as the Bible explains it, by indicating that God placed in man a faculty of articulate expression.

It is interesting to note with how much skill this crucial terminus is approached by all infidel evolu-

tionists both in life and language. But upon this we must not here enter. Many with whom we cannot agree in regard to the origin of language have afforded substantial support to what we esteem the true theory while endeavoring to build up an opposite one, and it is quite probable that, could philologists come to an understanding of terms, there would be much less of disagreement.

Hensleigh Wedgwood, in his work entitled *The Origin of Language*, says: "Language in its actual condition is an art, like baking or weaving, handed down from generation to generation; and when we would trace upward to its origin the pedigree of this grand distinction between man and the brute creation, we must either suppose that the line of tradition has been absolutely endless, that there never was a period at which the family of man was not to be found on the earth speaking a language bequeathed to him by his ancestors, or we must at last arrive at a generation which was not taught their language by their parents. The question then arises, how did the generation in which language was originally developed attain so valuable an art? Must we suppose that our first parents were supernaturally endowed with the power of speaking and understanding a definite language, which was transmitted in natural course to their descendants and variously modified in different lines of descent through countless ages, during which the race of man spread over the earth in separate

families of people, until languages were produced between which, as at present, no cognizable relation can be traced? Or is it possible, among the principles recognized as having contributed elements more or less abundant in every known language, to indicate a sufficient cause for the entire origination of language in a generation of men who had not yet acquired the command of that great instrument of thought, though in every natural capacity the same as ourselves?"

Thus broadly and yet definitely does he state the question, and having in the statement itself given us a hint of the answer he proceeds soon to say that "The investigator of speech must accept as his starting ground the existence of man as yet without knowledge of language, but endowed with intellectual powers, and command of his bodily frame, such as we ourselves are conscious of possessing." By which, if he means to affirm that man did not come into existence at the first with full-fledged speech, he is simply stating a truism; but if he means to affirm, what seems from his subsequent argument to be probable, that the power of speech was in no sense a special *gift* to man, he is at once in conflict with the most advanced philological teachings, and with the general trend of thought on these lines. Certainly, when he affirms that "the mental process underlying the practice of speech is the same as when communication is carried on by means of bodily gestures," and that "the same mental principles are involved in a nod or

a shake of the head as in a verbal agreement or refusal," * he is either stating half-truths, which he is sure will be accepted by every body, with the hope that by their help the *half-falsehoods* of his theory will be floated, or he is indulging in meaningless generalities. We are strongly inclined to the former view, for, in his undertaking to account for all language on the principle of unassisted imitation, he essayed an impossible task, but at the same time one which led him along lines where lie many beautiful and instructive truths.

His work is a very valuable one, and it is only where he overstrains facts or inferences to make them fit a theory that failure results, and he comes finally to a very modest conclusion, if we mark the hypothetical statement thereof: "Thus all analogy *tends* to the belief that the whole of language *would* be found to spring from an imitative source if the entire pedigree of every word were open before us." † The italics are mine, and yet, with a fuller definition of his terms, he might be found to mean by his statements only what the known facts warrant. It seems a pity that men cannot so define their terms as to make their meaning clear, or else make use of only such as are well understood; unless, perchance, they prefer the "cloudy maze, the safe retreat of words in words enfolded."

* *The Origin of Language*, by Hensleigh Wedgwood, p. 13.
† *Ibid.*, p. 154.

F. W. Farrar, who has written much and well on this subject, is worthy of notice. His *Language and Languages* is perhaps the most able defense of the onomatopoëtic, or sound-imitative, origin and development of human speech that has ever been published. He has evidently made extensive researches, and has brought to the subject a great wealth of learning, and yet I think his readers cannot fail to discover a warped judgment on many important points, and several contradictions of himself in the course of the work. At page 48 he says: "Language may with more accuracy be called a discovery or a creation than an invention of the human race. Undoubtedly the idea of speech existed in the human intelligence as a part of our moral and mental constitution when man first appeared upon the surface of the earth. In this sense we may call language a divine gift." In this declaration he takes a position which, were it not discounted by its settings, would be impregnable. Still further, at page 212, he goes on to say:

"Language, then, was not a direct revelation of the Almighty, nor was it an inevitable result of our physical organization; nor was it a purely mechanical invention accepted by general agreement, in consequence of a felt necessity; but the capacity for language was a part of our human constitution, and in the development of this capacity the senses, the memory, the understanding, the

emotions, the will, and the imagination all played their part.

"The great secret—the divine idea of language—became intuitively evident to man from the working of his intellect upon two strictly analogous facts. He found that the effect of powerful passion was to force from him involuntary spontaneous sounds, which, when repeated, recalled the passions by which they had been originally stimulated, and not only recalled them by virtue of the law of association to him who had originally felt them, but also conveyed and expressed them to others who were similarly affected by similar causes. But besides this, as may still be observed in children, the delicate sensibility of the nervous system in the still fresh and unworn human organism gave rise to a spontaneous echo of external sounds, an echo which partly repeated and imitated the sounds themselves, and partly modified them in accordance with the ideal impression which they reproduced. Originally, this repercussion of the sounds which had thrilled the auditory nerve was not due primarily to an instinct of conscious imitation, but to a far subtler law of physical sympathy with the outer world; but as it conveyed a pleasurable sense of power it would at once be adopted as a voluntary exercise apart from any necessity. In this instance, also, it would be instantly discovered that the imitative sounds, however modified by organic or subjective influences, inevitably recalled, by the same

law of association, the external phenomena with which they were connected. In both cases it would be instantly discovered that sounds were capable of becoming signs, not of sounds only, but of things. Here, then, were the elements of language; here lay hidden the germs of that infinite discovery which made man worthy of his destined immortality; here, ready provided by the working of divine laws, were the materials by which he was enabled to express his own sensations, and to recall the most striking aspects and influences of the world in which he lived." *

Now this conclusion, in part, at least, is well drawn, and has the ring of genuine truth, but the steps by which it is reached are in many particulars extremely unsteady and most decidedly crooked. There is altogether too much "taken for granted." It sounds all very well for a man to say, "Any one with his eyes open can see" this or that; "A man not bereft of reason cannot fail to understand the significance" of this or that; "Any mortal with half an ear *must* distinguish the adaptation of sound to sense in all these imitative words;" but in "cold type" such assertions look too much like an attempt to browbeat the reader, or force him into assent to the writer's theory. As a matter of fact, very many writers, and a vast number of readers, having *both* eyes open, possessed of their reason, and having not merely "half an

* *Language and Languages*, by F. W. Farrar, p. 212.

ear," but two good and whole ears, entirely fail to see, understand, and hear as our learned author does concerning many philological questions. Every student of this subject grants that there is much of truth in the onomatopoëtic theory, as regards a multitude of individual instances. But it would seem that its supporters lose sight of the still greater multitude of instances in which there is none at all, and go into ecstasies over the lesser number which possess it. If the five or six hundred fundamental roots could be accounted for in this way, and as clearly, or even if a third part of them could be thus accounted for, there would be substantial ground on which to rest the theory, but comparatively few *words* even can be thus traced, much less *roots*.

Max Müller says significantly: "If this principle of onomatopoieia is applicable anywhere it would be in the formation of the names of animals; yet we listen in vain for any similarity between goose and cackling, hen and clucking, duck and quacking, sparrow and chirping, dove and cooing, hog and grunting, cat and mewing, between dog and barking, yelping, snarling, or growling. There are, of course, some names, such as *cuckoo* which are clearly formed by an imitation of sound. But words of this kind are, like artificial flowers, without a root. They are sterile, and unfit to express any thing beyond the one object which they imitate.

"The number of names which are really formed by

an imitation of sound dwindles down to a very small quotum if cross-examined by the comparative philologist, and we are left in the end with the conviction that though *a* language might have been made out of the roaring, fizzing, hissing, gobbling, twittering, cracking, banging, slamming, and rattling sounds of nature, the tongues with which *we* are acquainted point to a different origin." *

This appears to the writer to be a sufficient refutation of the much lauded theory of onomatopœia, and nothing further will be added.

The interjectional theory is somewhat similar, and is held in common with this by most of its advocates. It undertakes to show that all language sprang originally from interjections, or impulsive cries: that the first man stepped on a sharp stone and cried *O!* that the first woman came suddenly upon some uncouth-looking animal and shrank back with an *ugh!* That they both saw something that struck them as being funny and began to *ha, ha!* that they were suddenly amazed and cried *ah!* And so on from these impulsive sounds, bursting forth from the lips as involuntary expressions of emotion, articulate speech grew up.

At first thought this seems a very plausible hypothesis. Those who look no deeper than the surface accept it at once, as not only a satisfactory but a very simple solution of the problem in hand. But

* *Science of Language*, by Max Müller.

a little closer scrutiny reveals its weakness, and a full investigation shows it to be built upon air, even as it is made up of expulsive breath.

We freely grant that interjections have, in all probability, always had a place in human speech, and always will have, no matter how perfect it becomes. They are, in a certain sense, indicators of our *merely animal* life. A man cries *O!* when he is hurt just as *naturally* as a dog yelps. We also grant that out of these merely animal signs a *sort* of language may be formed; but when we trace human speech, as we now possess it, back to its *roots* we do not arrive at interjections, but at general terms, at bundles of possibility, at germinant structures whose very nature forbids the thought that they represent nothing more than interjectional accretions.

In a somewhat peculiar, though very sound and judicious work, entitled *Diversions of Purley*, is found a very satisfactory answer to this theory: "The dominion of speech is erected upon the downfall of interjections. Without the artful contrivances of language, mankind would have had nothing but interjections with which to communicate, orally, any of their feelings. The neighing of a horse, the lowing of a cow, the barking of a dog, the purring of a cat, sneezing, coughing, groaning, shrieking, and every other involuntary convulsion with oral sound, have almost as good a title to be called parts of

speech as interjections have. Voluntary interjections are only employed where the suddenness and vehemence of some affection or passion returns men to their natural state, and makes them for a moment forget the use of speech; or when, from some circumstance, the shortness of time will not permit them to exercise it. And in books they are only used for embellishment, and to mark strongly the above situations." *

The very patent fact stated in this answer of Tooke, namely, that these involuntary cries of men have no more right to be called parts of speech than the natural cries of brutes, gives us a very significant intimation of the real motives in the case. If the interjectional theory of language could be made to stand, *the* great, or at least *one* of the great, barriers separating man from the brutes would be removed, and materialism would gain substantial ground. This may in some measure account for the zeal with which even so desperate a case is championed in certain quarters.

We have said that the fundamental roots back to which all languages have been traced are germinant structures, or general terms. These represent, of course, generalizations of thought. An interjection cannot represent any general notion. Hence interjections cannot bear any intimate relation to fundamental roots—they cannot serve to *name* a primary

* *Diversions of Purley*, by John Horne Tooke, London, 1860, p. 32.

conception of the human intellect. It is true there has been much disagreement among philosophers concerning the primary conceptions of the human mind, and an almost interminable indulgence in metaphysical hair-splittings over the so-called *primum cognitum*, and this has, in some measure, confused men concerning the primary generalizations which take place in naming objects or thoughts.

Locke, Hamilton, Mill, Stewart, and Brown have discussed this whole subject with great thoughtfulness, and I would gladly quote from each one enough to show his position, but lack of space forbids.

In view of this fact I will not ask the reader to accept my conclusions, but give Müller's instead; who, after giving extended quotations from some of these philosophers, and according to them the fullest consideration, says:

"Nouns all express originally one out of the many attributes of a thing, and that attribute, whether it be a quality, or an action, is necessarily a general idea. The word thus formed was in the first instance intended for one object only, though of course it was almost immediately extended to the whole class to which this object seemed to belong. . . . The first thing really known is the general. It is through it that we know and name afterward individual objects, of which any general idea can be predicated, and it is only in the third stage that these individual objects,

thus known and named, become again the representatives of whole classes, and their names or proper names are raised into appellatives.

"And how do we know things? We perceive things by our senses, but our senses convey to us information about single things only. But to *know* is more than to *feel*, and to perceive more than to remember, more than to compare. Now, the first step toward this real knowledge, a step which, however small in appearance, separates man from all other animals, is the *naming of a thing*, or the making a thing knowable. All naming is classification bringing the individual under the general; and whatever we know, whether empirically or scientifically, we know only by means of our general ideas. . . . At the very point where man parts company with the brute world, at the first flash of reason as the manifestation of the light within us, there we see the true genesis of language. Analyze any word you like, and you will find that it expresses a general idea peculiar to the individual to which the name belongs. . . . The four or five hundred roots which remain as the constituent elements in different families of language are not interjections, nor are they imitations. They are *phonetic types* produced by a power inherent in human nature. They exist, as Plato would say, by nature; though with Plato we should add that, when we say by nature, we mean by the hand of God. The number of these *phonetic types* must have been almost

infinite in the beginning, and it was only through the same process of *natural elimination* which we observed in the early history of words that clusters of roots, more or less synonymous, were gradually reduced to one definite type. . . . If inductive reasoning is worth any thing, we are justified in believing that what has been proved to be true on so large a scale, and in cases where it was least expected, is true with regard to language in general. We require no supernatural interference, nor any conclave of ancient sages, to explain the realities of human speech. All that is formal in language is the result of rational combination; all that is material the result of a mental instinct. The first natural and instinctive utterances, if sifted differently by different clans, would fully account both for the first origin and for the first divergence of human speech. We can understand not only the origin of language, but likewise the necessary breaking up of one language into many; and we perceive that no amount of variety in the material or in the formal elements of speech is incompatible with the admission of one common source. The Science of Language thus leads us up to that highest summit from whence we see into the very dawn of man's life on earth; and where the words which we have heard so often from the days of our childhood—'And the whole earth was of one language and of one speech'—assume a meaning more natural, more

intelligible, more convincing, than they ever had before." *

It is perhaps unnecessary to add any thing further, although where there exists so great an "embarrassment of riches" as we find in this field one scarcely knows where to stop. In bringing this chapter to a close, there exists a sort of indefinable unsatisfaction in the writer's *own* mind; for the subject is so vast that a whole volume, instead of a few pages, should be devoted thereto. Yet we believe that there can remain no serious question in the mind of any reader as to either the unity of the source whence language came, or the divine element which enters into it.

Leaving that inner consciousness which speaks to every man of the divinity within him entirely out of the present consideration, every logical mind, tracing the vast multitudes of human dialects inward to a few great families, and these families to a comparatively few root forms, as we have done, and then tracing these to fundamental generalizations, which are shown to be entirely outside of and above the powers of the brute creation, must, as it seems to us, just by a purely intellectual or rational conclusion, arrive at a point where he sees a somewhat which is not *of* man or *by* man primarily and solely, but *of* God *through* man; constituting a revelation in and through mortal speech of that immortal One whose

* *Science of Language*, by Max Müller.

only-begotten Son, co-equal with the Father, when he came into the world to manifest forth the eternal God, could find no more revelatory name, no more communicable term for the Unsearchable One than Logos, the Word—the *Word*, which was God—the Word, in which was life—the WORD, which was the Light of men.

"On earth there is nothing great but man; in man there is nothing great but mind."—*Phavorinus.*

"Man's actions here are of infinite moment to him, and never die or end at all. Man reaches upward high as heaven—downward low as hell; and in his threescore years of time holds an eternity fearfully and wonderfully hidden. . . . The universe is the realized thought of God."—*Carlyle.*

"Thinking is the talking of the soul with itself."—*Plato.*

"Man is but a reed, the weakest in nature; but he is a *thinking* reed."—*Pascal.*

"Mind is God's first end."—*Channing.*

"Man, an image of the invisible God, created to be like him in knowledge."—*Dwight.*

"Still o'er these scenes my memory wakes,
And fondly broods with miser care;
Time but the impression deeper makes,
And streams their channels deeper wear."—*Burns.*

"Keep this forever in the imagination of the thoughts of the heart of thy people."—*David.*

"In man, the more we dive, the more we see
Heaven's signet stamping an immortal make."—*Unknown.*

CHAPTER IV.

IN HIS MENTAL CHARACTERISTICS.

In our examination of man's physical structure we found many indications of design pointing to an all-wise Designer.

In the present chapter we purpose to take under consideration his mental structure. The treatment of this department of our subject will of necessity be *brief*. It will be impossible to do more than simply touch upon the more manifest indications of a supreme Mind as seen in the human mind, and yet, even in this partial survey, I am confident that we shall not only find a satisfactory refutation of all those theories of unbelief which deny the supernatural, and attempt to reduce man to a mere living machine, and those which through Agnosticism practically proclaim Atheism; but also such a complete and soul-cheering revelation of God as has not rewarded any of our previous inquiries.

The subject is not without its real difficulties, although the *un*real ones are most numerous. The former are inherent in the very nature of the problems involved, and must be met as best they can under the necessary limitations of human thought. The latter

are largely the result of the metaphysical smoke arising from the interminable conflicts of learned disputants, who seem to prefer contention to agreement, if only a good opportunity be theirs for constantly airing their superior knowledge and dialectical skill. A few of these must receive attention, merely for the sake of showing them to be imaginary, and thus removing from the mind of the general reader all apprehension of danger from these threatening clouds which hang so heavily over truth.

One of these, which has taken on immense proportions since the publication of Immanuel Kant's works, is agnosticism, or nescience—a denial of the possibility of real knowledge. It is a great bugbear in philosophy, and the more one examines it the more astonished does he become that sensible men, not to say learned men, should have ever formulated such a theory, or, the theory having been formulated, should give it credence; and yet it is here, and seems to have "come to stay"—at least for a time—and multitudes find in it a peculiar fascination. There is a beautifully simulated modesty about it which appeals to certain natures with great force, and by its very defects wins recognition and partial adoption.

I mention this theory first, because it lies at the threshold of the door we are proposing to enter, and seems to entirely block up the way by denying that we can know any thing absolutely. It discredits every deliverance of the mind by declaring it wholly

untrustworthy, and by so doing virtually denies the existence of mind as commonly understood. For the logical consequence of even a partial denial of the validity of knowledge is a complete denial. There is no half-way ground on which to stand. I am aware that agnostics do not undertake to carry the theory to its logical conclusions, and are unwilling to admit them when held up to their view. But refusal to admit a valid inference does not invalidate it. Those who assume the unreality of the primary knowledge of self, as self, and as a thinking self, must admit the absolute banishment of all certainty from the world, even the certainty of their own assumed "unreality."

I desire the reader to see the absurdity of this specious hypothesis so plainly that all the fair enticing forms into which it has been thrown may no longer exercise the slightest influence upon his thought. To this end let us look a little more closely at what we call knowledge.

Knowledge, considered in its fundamental elements and requisites, is one and the same in *kind*, whatever may be the *object* of that knowledge. It is well to keep this in mind; for the primary purpose of agnostics is to prove that man cannot know God. In no other way can this inability be made to appear plausible than by showing self to be imaginary. But even agnostics talk of knowledge as a something. This it is impossible to deny without rendering all

words meaningless. Now, in order to the existence of knowledge there must be some*thing* to be known; and evidently there cannot be some*thing* known without some*body* to *know* it, or possess knowledge of it. In other words, there *must* be a thinking person—a *knower*—and an object to be known, or it is impossible for that which all parties call "knowledge" to exist. Even Herbert Spencer, in his *Psychology*, says: "The co-existence of the subject and object is a deliverance of consciousness which, taking precedence of all analytic examination, is a truth transcending all others in certainty." To which every one of us assents. We cannot do otherwise.

Now, bearing in mind that knowledge is one in kind, take a step farther. The notion has become prevalent in certain quarters, supposed to be centers of learning, that we can know only *material* substances—only that which can be handled, weighed, or measured, seen, tasted, smelled, or heard. This results, doubtless, from a too constant consideration of the material aspects of our being. A fact of consciousness is as truly a fact as a loaf of bread, or a block of wood, or any other material substance; and it is a contradiction of terms to affirm that man cannot absolutely know himself as a thinking being as really as he can know the concrete substances of which he thinks. Those who champion this gross notion argue that it is impossible to know any thing which we cannot show to be true by experiment. For the sake of the argument, sup-

pose we grant this. There is a possibility of experimenting upon the immaterial, in thought, as really and truly as upon the material.

I am sitting in my pulpit on a Sunday morning, observing the congregation already assembled, and the late comers as they enter the doors and pass down the aisles. I think of Mr. A. as having come from his elegant home, blessed with perfect health, and having all of this world's goods that heart can wish. I think of Mr. B. as having come from a home of poverty, and see that he is in a condition of physical weakness. In the five minutes thus spent I recognize and take note of a hundred different faces, and call up in thought a thousand different circumstances.

I am not conscious of any logical processes of thought. I know these faces instantly. It is actual, primary, fundamental sense-perception through the eyes. This sort of knowing our opponents admit.

But now I submit that my knowledge of my own self, perceiving these faces, is just as actual, primary, and fundamental; although it does *not* come through sense-perception. While looking upon these faces I may not have *thought* of myself as *thinking;* but, instantly, upon turning the mind within, and asking what I am doing, I become conscious of rejoicing in A.'s prosperity and of sorrowing over B.'s hard lot. I am conscious that the rejoicing and the sorrowing exist, as entities; immaterial, 'tis true, but *entities* nevertheless, objects of knowledge. I can pick them

up and handle them, "experiment upon them," if you please, weigh and measure them, with a view to determining which is the greater. Then, with this certain knowledge obtained, I look for the knower, which is the other absolute requisite for knowledge, and find it to be my*self*. The existence of this *self* is just as certain as the existence of the faces, or the emotions resulting from beholding them. I know this self-existence *intuitively*. The knowledge is just as actual, primary, and fundamental as that which came through sense-perception.

It would seem impossible that any man should refuse to admit the certainty of this primary knowledge of *self* as a *knower*. But some men who claim to possess great stores of knowledge, to be great "knowers," do refuse to admit it. The general reader may think that I am belaboring a "man of straw," but not so. Professor Huxley, in *Lay Sermons*, claims that our knowledge of any thing we know or feel is "nothing more than a knowledge of states of consciousness;" that "some of these states we refer to a cause we call self, others to a cause or causes we call not self, but neither of the existence of self or not self have we any certainty"—and much else of the same sort. Now, here is either an egregious mistake of a thoughtful man, or a desperate attempt to save a sinking theory by throwing out an extremely shadowy plank.

He either fails to distinguish the real nature of introspection himself, or hopes to so befog us that *we*

shall fail to understand it. I am inclined to give him credit for honesty—*and* the blunder.

The fact is, he nowhere succeeds in giving any intelligible explanation of what he means by this nebulous expression, "states of consciousness," upon which he hopes to float his theory. We would respectfully suggest to Mr. Huxley that this is all-important. In *whom* do these "states of consciousness" *exist*, or of *what* do they *consist?*

If Mr. Huxley, or any other man, can be *certain* of "states of consciousness," there must be, according to the accepted fundamentals of all thinking, some entity represented by the expression. This brings him back to the original self, and certainty of the existence of self, and he finds that he has simply been dealing with the same substance under a different name, fondly imagining that he had found something new. And Huxley is only one of several illustrious men of similar views, all of whom have numerous followers.

I think the reader will agree with me, that the absurdity of agnosticism is so manifest that Christian scholars need not be disturbed by it; and yet I desire to record the opinions of those whose authority is of greater weight than mine. Samuel Harris, LL.D., says: "Agnosticism belies the constitution and consciousness of man, debars itself from the possibility of argument in its own support, and contradicts and nullifies itself. It is impossible to appeal to knowledge in proof that knowledge is im-

possible, or to reason, to prove that reason is irrational or untrustworthy."

We find the opinion of Augustine quaintly and vigorously expressed in *Civitas Dei:* "I am most certain that *I am*, and I know this and delight in it. In respect to these truths I am not at all afraid of the arguments of the academicians who say, 'What if you are deceived?' If I am deceived, *I am.* For he who *is not*, cannot be deceived; and if I am deceived, by this token *I am.* And since *I am*, if I am deceived, how am I deceived in believing that *I am?* for it is certain that *I am*, if I am deceived. Since, therefore, *I*, the person deceived, should *be*, even if I were deceived, certainly I am not deceived in the knowledge that *I am.* Consequently, neither am I deceived in knowing that *I know.* For as I know that *I am*, so I know this also—that *I know.*"

No author whom it has been my privilege to read has summed up the whole matter in few words more completely than St. George Mivart, F.R.S., in *Lessons from Nature as Manifested in Mind and Matter.* He says: "Absolute skepticism, with every position that necessarily involves it, is to be rejected as an absurdity. For, if nothing is certain, if there is no real distinction between truth and falsehood, there can, of course, be no useful discussion. If our life may be a dream within a dream, if we may not be supremely sure that a thing cannot both *be* and *not be*, at the same time and in the same sense, then thinking

may indeed be affirmed to be an idle waste of thought, were it not impossible to affirm that any thing is or is not any thing, and *as* impossible to affirm such impossibility. Such skepticism is, of course, as practically impossible as it is absurd." Of the same opinion is the celebrated Hermann Lotze, as expressed in his *Logic*, published in Oxford, in 1884, in three books, "Thought," "Investigation," and "Knowledge," and also in his *Metaphysics*, in three books, "Ontology," "Cosmology," and "Psychology," published the same year.

After taking up and most thoroughly exposing the fallacies of the experimentalists and semi-agnostics, he scatters out-and-out agnosticism to the winds as follows: "It must seem utterly inconceivable that we should ask for the 'what' of a thing and yet look for the answer in any thing except that which this thing is and does; or that we should inquire as to its 'being,' and yet seek this anywhere except in its activity. And in the same way here, it must seem equally unintelligible that we should suppose we do not know the soul, because, although we know all its acts, we are unluckily ignorant of the elastic sphere to which, according to Kant's comparison, the nature manifested in these acts is attached; or that instead of seeking the living reality of the soul in its production of ideas, emotions, and efforts, we should look for it in a nameless 'Being,' from which these concrete forms of action could not flow, but in which,

after some manner never to be explained, they are supposed to participate. . . . Every soul is what it shows itself to be, unity whose life is in definite ideas, feelings, and efforts. . . . Within this sphere the soul shows itself to be to a certain extent an independent center of actions and reactions; and in so far as it does so, and so long as it does so, it has a claim to the title of substance."

This is strong language to come from such a source on this subject; for, if we were to believe the statements made in some of the more popular philosophical publications of the past two years, we should be obliged to place Hermann Lotze among the supporters of a semi-agnostic materialism.

It is always safest to examine the writings of such a man for ourselves, for there is a fixed determination in many pseudo-scientific quarters to range every illustrious name on the side of infidelity.

We feel warranted in concluding that the dense fog-bank of agnosticism, which seemed like a mountain lying at the very threshold of our subject, has vanished from the sight of the reader; and we may assume the existence of a thinking power in man, and proceed to examine it, as to its constitution and characteristics, with the same confidence with which we enter upon the examination of any other subject

It becomes necessary in this examination to consider first of all certain claims which have been set up, and stoutly championed, by those disciples of phys-

ical science who are bending every energy of their natures to the banishment of God from his universe.

Positivism, and its corollary, or logical sequent, secularism, is so allied to agnosticism that whatever refutes one refutes the other; therefore it is unnecessary to give it any special notice at this point, and we invite attention to that phase of materialism which pertains to our present inquiry.

Not content with endeavoring to prove that matter is eternal, and ordinary animal life the result of material forces exercised in some sort of a self-organization, materialistic philosophers have been making strenuous efforts to show that even the human *mind*, with all its varied endowments of consciousness, memory, reason, will, etc., is, after all, only a "mode of motion," a "peculiar manifestation of force," a "striking correlation of nervous energies," a "highly specialized arrangement of atoms"—in a word, *any thing* which you please to call it, if only you make use of materialistic terminology.

These men of science profess to do simply this—when stripped of all disguises and glosses of language—reduce mind and spirit to matter. Then, having nothing to account for in man, or the whole animal creation, except organized matter, find the origin of all its varied forms in *un*organized matter, and thus shut God out of the calculation.

At first thought it would seem that there could be no occasion for the refutation of such an hypothesis,

for the simple reason that sober-minded men would not be influenced by any thing so contrary to consciousness.

But so great has been the advancement of material science in the last fifty years, so astonishing have been her triumphs over the obstacles previously barring up her way, that men have come to look upon her as supreme, and vast multitudes are ready to write "Omnipotent" as one of her titles, while the increased facilities of communication and multiplied comforts of life secured by these triumphs have placed at the disposal of scientific men the largest wealth, and won for them the most enthusiastic praise; hence, very naturally, men are inclined to accept their deliverances as final, and be guided by them, even in matters outside of their own legitimate domain.

I would not be understood to teach, by the phrase "their own legitimate domain," that men should be confined to any one special line of investigation or search for truth. On the contrary, I would urge upon every scholar the importance of becoming acquainted with all departments of learning, and as far as possible mastering the fundamentals, at least, of all the sciences. But the difficulty lies in this: that many of those who have accomplished much in the physical sciences, and a few who have become preëminent therein, have presumed to condemn, *without investigation*, the mental and moral sciences, even to the

extent of denying them the name of sciences, and scoffing at their advocates as men of "narrow minds," of "undeveloped reasoning faculties," of "fossilized ideas," or "moss-covered theological vagaries," utterly incapable of appreciating the "scientific method" and the marvelous progress of the present age; while, without having given one hour a week on the average, during the whole period of their scientific career, to the serious study of mental science from a theologico-moral stand-point, they esteem themselves capable of pronouncing authoritatively upon all ethical and biblical questions. This is by no means the animus of the *truly great* men of science, of those who have actually done most toward bringing about the unparalleled progress of recent years, but simply of the few eminent men who have made the most *noise*, and the multitude of would-be imitators, who are eagerly striving to gain recognition by becoming faithful echoes.

Genuine science, like genuine religion, is modest and child-like in spirit and bearing. Both have the same divine authorship. Spurious science, like spurious religion, is self-asserting, arrogant, puffed up, doth "behave itself unseemly." Both have the same earthly authorship.

Professor Tyndall says: "Not alone the exquisite mechanism of the human body, but the human mind itself, emotion, intellect, will, and all their phenomena, were once latent in a fiery cloud." Bear in mind,

then, that, if materialism be true, there is no more indication of supernatural power in the mind of an Aristotle, a Homer, or a Webster than in the pulp of a jelly-fish or the claw of a lobster.

This is not generally admitted by even the advocates of the materialism of the present time. Nevertheless, the logical conclusion of all materialistic theories is just what we have indicated, and no theory is worth any thing which cannot abide its own inevitable results.

Lange says: "Sensationalism is the subjective of which materialism is the objective." If this be true —and I have yet to find that it has been successfully denied—it is possible, at the outset, to place materialism in contradiction with itself, and, were it our pleasure so to do, we might leave this house, so greatly lauded for its *material* strength, thus "divided against itself," to bring about its own demolition.

Those infidels who talk so flippantly about the contradictions of the Bible would do well to cease reaffirming these unimportant and, for the most part, imaginary discrepancies, and turn their attention to the endless contradictions of their own cherished theories, many of which agree in only one particular; namely, in declaring that "the Bible is not what it claims to be."

But we must look a little more closely at a few of the exact puttings of this theory as related to mind. Close acquaintance reveals character. Those who

have been attracted by the fair exterior will perhaps loathe the inner nature.

I am not sure that there is any essential difference between the old and the new save in the dress, the style, the rhetoric of the putting. For example, we find in the writings of Cabanis, one of the old-time materialists, the following: "The brain secretes thought as the liver secretes bile;" and polite naturalism of a later period curls its lip and elevates its nose at the offensive *language*, but fully adopts the *teaching* notwithstanding; for in a work to which I have already made reference in a former chapter, entitled, *Kraft und Stoft*, the erudite Büchner claims that "mental activity is a function of the cerebral substance. The same power which *digests* by means of the stomach *thinks* by means of the brain. As there is no bile without liver, so there is no thought without brain. The secretion of the liver and kidneys proceeds imperceptibly, and produces a tangible substance. In so far it is *superior* to the secretion of thought. Mental activity is emitted by the brain as sounds are by the mouth, as music is by the organ."

This is certainly a frank putting of the case. Every body can see just what is meant. Without any sophistries of statement the avowal is made that the brain, this gray substance of which we have been speaking, *can* and *does* make emotion, will, and imagination, poems, orations, and essays, out of the blood

which flows to it, just as the stomach makes chyme out of the food and drink we swallow. To manufacture another "Paradise Lost," or Declaration of Independence, it were only necessary to set the gray pulp of the cerebrum at work upon its constituent fluids and solids, as the liver would go to work upon the fluids and solids passing through it. And now I imagine I hear some astonished reader—astonished because he has not been accustomed to reading or hearing the exact utterances of materialism, but rather its dogmatic assertions concerning Bible truth —saying within himself, "*Did* sane men ever make such declarations as these? Are such statements to be found in published volumes?" And I answer, "Yes; and much more of the same sort." As to their sanity I care not to be asked to pronounce.

The bald statements are before the reader in the exact language of the writers. Still the reader is perhaps incredulous as to so manifest an absurdity being seriously advocated by any body at the *present* day. If so, let him turn to Lewes's great work, *Problems of Life and Mind*, and he will find whole chapters given to statements similar to, or in support of, the following: "The neural process and the feeling are one and the same process, viewed under different aspects. Mind is a function of the organism, and this both in the mathematical and the biological sense of the term. Intelligence is the sum of the nervous adjustments on which organic actions depend, and the

sum of organized experiences which determine conduct."

This may be a little smoother language than Büchner's, but it means the same. It may not be quite as offensive to the *taste* as the statement, "the brain secretes thought as the liver secretes bile," but it is equally offensive to *reason*.

Bishop Thomson has well said, "If the brain secretes the mind it is different from the mind, and hence it should be provided with an apparatus like the gall-bladder to receive its product. It has been conjectured that a part of the brain has been reserved for this purpose, which has been compared to a calculating machine. The hypothesis breaks down under its weight of absurdity. Mind is different in its nature from matter. Mind is self-active, capable of controlling its principles and trains of thought. We address logic to the mind, but not to the liver. You cannot make a man a Calvinist by calomel, or a Universalist by belladonna. You cannot cure rheumatism with Calvinism, or neuralgia with Arminianism." *

Attention is also invited to the palpable absurdity, and contradictory nature, of the positions taken by scientific evolutionists who refuse to be called materialists. Perhaps Haeckel stands among the foremost of these, and in order that the reader may understand the position he occupies I quote a brief pas-

* *Evidences of Revealed Religion*, p. 48.

sage from the concluding chapter of his *Evolution of Man*, entitled "Results of Anthropogeny." He has conducted his reader through twenty-five long chapters, and exhibited the strongest possible phases of evolution and the monistic philosophy, and here he sums up the whole matter:

"This mechanical or monistic philosophy asserts that every-where the phenomena of human life, as well as those of external nature, are under the control of fixed and unalterable laws. It further asserts that all phenomena are produced by mechanical causes, not by pre-arranged, purposive causes. In the light of this monistic conception of nature, even those phenomena which we have been accustomed to regard as most free and independent, the expressions of the human will, appear as subject to fixed laws as any other natural phenomena. Man is not above nature, but in nature. The real materialistic philosophy asserts that the vital phenomena of motion, like all other phenomena of motion, are effects or products of matter."

Here the reader notices the surprising inconsistency of this great evolutionist, and no doubt feels inclined to discount his abilities; but be not too severe upon him. He is simply making a masterly effort to extricate himself from the dilemma into which his theories have brought him, and is not to blame for some manifestations of discomfiture. You or I would do the same if in the same hard case.

Lest I should seem to unwarrantably magnify the inconsistencies of this "monistic philosophy," which, after all, refuses to be called materialism, I give the well-chosen words of Dr. Diman: "The strongest intellectual attraction of materialism consists in the fact that it is a system of monism; it apparently satisfies the craving for unity which is so deeply planted in the human mind, and which receives new support with the progress of knowledge. We may assume, without hesitation, that a monistic theory is the expression of rational thought. Human intelligence instinctively conceives of all co-ordinate causes as secondary. But the evident argument against materialism is that it does not meet this very want. Supposing matter to have been reduced to a single, pure, homogeneous physical element, we have still to explain the fact that, in all the phenomena of the universe, matter is always combined with force. It is not dead matter with which we deal, but matter organized, and undergoing incessant and universal transmutations. The question at once arises, Is matter the cause of force, or is force the cause of matter? Unless one of these questions be answered in the affirmative, we have two original principles in the universe instead of one, and thus, at the first step, sacrifice that principle of unity on which scientific materialism so much prides itself. For, evidently, if force and matter be conceived of as not related as cause and effect, but as inseparable and co-ordinate,

we have two eternal principles instead of one, and the boasted monism of materialism is merged in dualism. The perplexity of the problem is not lessened but increased. If, on the other hand, force be conceived as the cause of matter, we preserve unity but we destroy materialism. For we trace the existence of matter to an immaterial source; it becomes at once secondary and dependent. If reason pursues its search for unity it cannot stop with physical force, for a universe of physical force would be simply an aggregate of forces. Behind the multiplicity of natural forces there must reside some single, original, and indivisible power. But when we have reached this conclusion, we are on the threshold of the great truth that the universe had its origin in mind. Thus, in this whole discussion of matter and force, materialism is involved in *fatal contradictions.* As a reasoned system of the universe it goes beyond its own limits, and falsifies its own premises. For materialism, so far as it claims any logical basis, rests on the postulate that all knowledge is attained through the organs of sense, and that beyond what the senses report, and the generalizations from this, we know and can know nothing. The properties of matter, it is claimed, are the sole, the direct, the immediate objects of the senses: and the facts of nature do not demand for their explanation any thing distinct from matter. Materialism, of necessity, involves sensationalism, and sensationalism necessarily signifies that

all knowledge of matter is dependent on the particular constitution of the senses of the individual. The materialist cannot pretend to any knowledge of matter as it is in itself; it can exist for him only so far as his senses perceive it to exist.

"Yet the whole system of scientific materialism is built up on the assumption of the real and independent existence of force and matter. We are told that force and matter are eternal; that they are absolutely incapable of increase or diminution, of creation or annihilation. On what evidence are these assertions made? Is the eternity of matter or of force any thing which the senses report to us? Or is it a legitimate generalization from any thing that the senses report? When he ventures to make these assertions, the materialist asserts something that he could by no possibility have learned through his senses, and something that no experiment of science could have demonstrated.

"Modern materialism rests throughout upon a series of realistic hypotheses, and yet these hypotheses, from its own stand-point, are wholly untenable. Materialism claims to be a system which appeals only to principles that are rigidly scientific, yet it cannot reach one of the conclusions on which it strongly insists without setting these principles aside." *

I am confident that those of my readers who have examined the writings of materialistic science with

* *The Theistic Argument*, by I. Lewis Diman, pp. 349, 350.

any care will agree with the conclusion here reached. For, although many valuable facts are brought to light by materialists, for which every genuine investigator is always thankful, when it comes to theories and philosophical conclusions their inherent inconsistencies are so great that all manner of verbal hedging and fencing are indulged in.

The truth is, as I think will appear to every reader, that materialism, so far from proving a help to the establishment of that uniformity of nature's on-goings, in which materialistic scientists seem to take so great delight, actually hinders it. We who contend that there is "a spirit in man: and the inspiration of the Almighty giveth them understanding," that matter is under the control of mind, and man's will free, that it is this immaterial part of us which constitutes that image of the divine in which we claim to have been created, do not hereby contend that the *order* of the universe is left entirely to the caprice of man's will, as our opponents endeavor to make it appear. We do not combat a truly scientific doctrine of "persistence of force," or "indestructibility of matter," or "cosmic and vital development," or any other authenticated datum of established science. On the contrary, as has been already shown, our opponents are the men who are smiting themselves in the face, and then complaining of unfair treatment from us.

But, with all its inconsistencies and contradictions, "materialism is abroad," and it has obtained a mighty

grasp upon the thought of the age. It should receive the most careful attention from every friend of truth, especially as related to psychology.

Here it is most insidious in its elementary appeals to belief. It lays down certain fundamental principles which every body readily admits, and by gradual advances reaches out into the inadmissible, and even the unthinkable; but does it so deftly that the unwary are easily led captive by its subtle genius—the *more* easily, since its leadings harmonize with the natural propensities of human nature.

All parties are ready to grant that the relations existing between mind and body are very intimate; that mind, as we know it, does not exist without body. Man is not all soul, neither is he all body, but is both. Thus much physiology teaches us. This she does, by calling our attention to those organs of the body most closely associated with the mind, and the characteristic phenomena which accompany cerebral action. In a former chapter attention was called to the marvelous structure of the nervous system, and we there found marked indications of All-wise design. We do not wonder that physiologists, constantly engaged in the study of physical phenomena, constantly employed with their vivisections, chemical reactions, and endless experiments, should come to almost expect to find the very seat of life, the very inmost soul of man.

The tracing of these experiments is full of genuine

interest, as far as they pertain to the legitimate domain of physiology, and are performed by men of recognized standing in that department of science. All that we complain of is that semi-scientific philosophers are constantly endeavoring to substantiate some skeptical theory of irreligion, by appeals to data which have never been themselves substantiated. Of all the *non-sequiters* that have been foisted upon the world, some of the most far-fetched are met with in the writings of these theologico-physiological philosophers, some of whom would appear to possess very little actual knowledge of physiology, but to be adepts in the use of elastic inference.

Sensory impressions are made upon the nervous system; which, in its minute ramifications, reaches every part of the body, and *some*how these impressions are communicated to the mind.

The most superficial observation leads to the conclusion that the central organ of thought and action is within the skull. Proceeding to the study of this central organ, we find it made up of various lobes, and of two distinct kinds of substance, and divided into two hemispheres, or halves.

Careful investigation has enabled us to assign to the upper and forward portion of the brain, called the cerebrum, the larger share in all intellectual processes. Thus far we all agree. The intimate relation existing between the various organs and parts of the body, and this cerebrum, through the marvelous

nervo-telegraphic communication, is patent to every student; and yet one would conclude, from the patronizing air with which certain infidel philosophers inform us of this intimate relation, that it was a *new* discovery, on which they had some special claim. But when these same would-be informants proceed to instruct us that the cerebrum *is* the mind—that memory, reason, emotion—in a word, the whole *mind*—is only so much pulpy gray substance—they are taking a long stride into the unknown, and we cannot go with them. It is true that thought, *as we know it*, cannot exist without the brain, but it is equally true that the brain *can* exist *without thought*. This will be universally admitted, and this admission necessitates the farther admission that thought is not the brain, for, if it were, the brain could not exist without it.

Let the reader carefully note that I say, "Thought, as we know it, cannot exist without the brain," for we *believe* that thought, as existing in God and the spiritual realm generally, *does* exist without the material brain. The gray substance is absolutely necessary to thought in our present existence, just as the writer's pen, or its equivalent, is absolutely necessary to his writing; but who will say that the pen *is* the writing?

The latest investigations in physiological science leave the problem of the body's relation to the mind just here—declaring the former to be but the instrument of the latter, and the brain to be a part of the

body. Hence the final conclusion of all genuine science is that the mind of man is not material, but that it must work through a material instrument as long as it remains under our observation. This appears to me a sufficient answer to all objectors who would materialize mind and its phenomena, but I am glad to support my own opinion with that of others.

The author of *Cosmic Philosophy*, Professor Fisk, says: "One grand result of the enormous progress achieved during the last forty years, in the analysis of both psychical and physical phenomena, has been the final and irretrievable overthrow of the materialistic hypothesis." The author of the *Philosophical Basis of Theism*, Professor Harris, says: "Materialism is essentially the dogmatic assertion that all phenomena are the manifestations of matter and force and are accounted for by them. Mental phenomena are realities which materialists do not deny, but which they try to account for as manifestations of matter and force. But they are proved to be not the manifestations of matter and force, and not accounted for by them. . . . And this conclusion implies that materialism, as a philosophical theory of the universe, is an entire failure. . . . That the physical phenomena recognized by science as concomitant with mental phenomena are themselves, as explanations of the mental phenomena, inconceivable, and involve insuperable difficulties."

Sir William Dawson, in a treatise on the same sub-

ject, says: "It has become evident that the more recent discoveries as to the functions of brain will not warrant the extreme views of materialists. Force, whatever may be its true character, is now regarded as something distinct from matter, and that by means of which matter is put into motion, and consequently eventuates in the phenomena with which we are familiar. Now, man is essentially an active power, who by his volition puts forth forces to mold and change material things. These do not originate in any part of his body, which is simply an instrument employed by the mind, but in his spiritual nature, which is in reality his true self. The action of mind upon and through the body manifests the operation of a conscious force which can have originated in nothing but spirit, and the cessation of the operation of that force and the negation of consciousness is utterly impossible to conceive."*

Without further citation of authorities, or further development of the argument, I feel warranted in proceeding to consider the characteristics of the human mind, assuming the demonstrated existence of not merely a thinking power in man, as opposed to the doctrine of agnosticism, but also of a real entity, distinct from body, which we call mind, as opposed to materialism, positivism, sensationalism, evolutionism, and any and every other ism which undertakes to deny such entity.

* *Revelation and Natural Science*, p. 31.

I believe that, without laying ourselves open to the charge of "begging the question," we may speak of the manifestations of that entity in the terms which men in general are accustomed to apply to the manifestations of mind, and seek for a revelation of God therein.

The characteristics of the mind which furnish indications of a divine Author are so numerous, and striking, that I cannot hope to give to each one the attention it deserves, but may simply notice a few, and these without any pretensions to either logical sequence or completeness.

INTUITION.

I would first call attention to intuition, not with the purpose of discussing this power philosophically, but with a view to discovering therein indications of the divine image.

It is by the intuitive power of the mind that we become acquainted with the universal principles which underlie all correct thinking. Intuition gives us universal truths or self-evident knowledge, as, for example, the axioms of mathematics, the fundamentals of logic, and the data of self-consciousness in general. I say it is by the intuitive *power* of the mind that we reach and hold these fundamental truths, for they are not a somewhat which is thrown *into*, or impressed *upon*, the mind by some power inherent in that somewhat, or by some power outside of and unknown to

the mind; but the mind is *itself* active in this fundamental knowing; in the mind *itself* inheres the power to intuit—to, in a sense, formulate certain basal principles or axiomatic truths, which it holds unyieldingly as necessarily true, and which every other healthy human mind holds in the same manner and in the same sense. *How* it does this it is not our province to explain, nor has any man a good reason for asking an explanation. The fact is here, is manifest to every individual; and the very inexplicability of the *how* only serves the more perfectly to separate this power from the ordinary explainable powers of the mere bodily organism, and to mark it with superior dignity.

There has been an almost endless amount of metaphysical quibbling, and bandying about of big words to no good purpose, over this question of the intuitions. There has also been much of very great value written upon the same subject. Some of our wisest men have handled it with the utmost clearness, and have uniformly come at last to substantially the conclusion to which the clear common sense of even the unlearned man of careful thought is sure to come; namely, that the mind, the *ego* within, is consciously active in formulating for itself even these primitive data of necessary truth; that, although it does not stop to go through any laborious, protracted process of reasoning to make out that the whole of a thing is greater than any of its parts, or that a body cannot

be and *not* be at the same time and in the same sense, yet it *does* act in the decision, it *does* contribute something thereto, instead of being a mere mass of impressionable matter or sensitized plate, which passively receives some *thing* from some *whither*—nobody knows *whence*.

Now mark the marvelous sweep of this intuitive power. It is a power which not only contributes that primitive knowledge of our every-day experiences which is so important to all of us, no matter how lowly our position or how circumscribed our field of view, and which in a very important sense makes the most obscure man a veritable sovereign; but it forms the sure foundation of the most elaborate generalizations of the foremost minds in all ages, and is that without which all intellectual advancement would be impossible. It enables man to make calculations the bare *results* of which would seem beyond all comprehension, to say nothing about the intricate mazes through which the various processes of the solution had to be carried. But through all these apparently dizzying measurements and formulæ, geometrical and other figures, this power guides, placing knowledge to knowledge, relation to relation, inference to inference, with unerring precision, and, in the well-trained mind, without conscious effort. *In* such exercise this power grows, and *upon* it seems to feed in such a manner that the entire being is exhilarated. Who that has ever passed successively from the ele-

mentary processes of geometry on up through the integral and differential calculus does not remember with what a sort of indefinable uplift the solution of the first difficult problem seemed to "*come to him*," while he was all the while conscious that "*he did it?*" Who does not remember how his whole nature seemed to glow and burn, as with an inner fire truly supernatural, when the vaster generalizations of some of the problems of the higher mathematics took on form and substance, and he shouted "Eureka," with full, soul-cheering certainty!

Let not some critical reader here congratulate himself that he has discovered inconsistency in the author, in that he is attributing to intuition the triumphs which belong to inductive reasoning. Be that as it may, the intuitive power plays a very important part in all these processes. The mind arrives at all its conclusions by a process of reasoning, however rapid that process may be. What we call intuition, or intuitive reasoning, as distinguished from reasoning in the common acceptation of the term, *seems* absolutely instantaneous in its action; but this does by no means invalidate its claims to genuineness. Although we think of it as instantaneous, it consumes time in its processes, though such minute portions thereof as to be undiscoverable by any known means of measurement. In other words, its action is "as quick as thought," and we have nothing quicker with which to compare it.

In the calculations instanced above, or even in simple addition, there are numerous illustrations of this rapidity of thought. Place before the average book-keeper a column of figures to be added. Let it extend the entire length of a sheet of foolscap, and almost before you could read the figures, yes, quicker than the ordinary reader would *call out* the figures one by one, he will tell you the sum total of the entire column. This is so commonly done that we do not often stop to consider what must take place in that book-keeper's mind in order to accomplish the result. In the first place, perceptive or presentative intuition must clearly recognize the first figure, and give it its true value; then, holding this firmly within its grasp, must clearly recognize the second figure, and give it its true value; and then, with both images and values securely held, rational processes must make out and declare the sum of the two, which sum must now take the place in perception which was previously occupied by the two separate figures, and alongside of it must be placed, by the presentative faculty, a third figure; and so on through the whole column. At each successive step new figures are seized upon, and old ones released, new totals made up, and old ones cast aside; and all with such rapidity that the most fluent speaker cannot possibly articulate even the *results* as fast as all of these multiple processes can be gone through by his marvelous mind-faculty.

Moreover, not merely one column, but oftentimes two or even three or more columns, will be added with almost startling rapidity.

Nor is this all, but large numbers will be multiplied and divided with a facility which is absolutely amazing to any one who has never studied this God-given, Divinity-revealing faculty, which resides in every mind, and only needs cultivation to enable it to assert its power.

Who can fail to see in all this the plainest indications of Spirit? True, we cannot mathematically demonstrate that all these operations *may* not be performed by means of some hitherto unknown processes of material nature; but no reasonable man asks that a negative shall be mathematically demonstrated. Nor can we thus demonstrate the positive existence of Spirit, but we can discover such sure indications thereof that the mind rests satisfied in the consciousness.

This introduces us to that phase of intuition concerning which I have as yet said but little in this connection, but which was under review while dealing with agnostic objections; namely, self-consciousness. The soul's recognition of itself as a "*self*," and of its surroundings as surroundings, and of its acts as self-acts—this is the very foundation of our being. This is that beneath which and beyond which we cannot go. This is the inner sanctuary of the soul—that holy of holies which no scalpel ever lays bare, no

microscope ever sees, no spectrum analysis ever resolves, no chemical reaction ever affects—which all science and all philosophy have striven in vain to explain, but which is naked and open to itself, and the denial of whose existence has been shown to argue either insanity or insincerity.

Here every normal mind rests secure in its own conscious being, looks calmly out upon its environment, and receives impressions from without, through the senses; looks reverently up into the face of the Author and reflects his image, declaring within itself, and for itself, that truth is the same every-where and at all times; that when it cognizes a truth it knows it to be such, and that every other mind, even the mind of the Eternal, must of necessity—the necessity of His all-perfect attributes—cognize it as the same.

Thus does each individual man, in this very fundamental element of his mind, become a revelation of God unto himself, whether he will confess it or not. This may sound like dogmatism, and no doubt the disciples of nescience and materialism will characterize it as such, but we claim to have shown satisfactory indications of the validity of our position, and appeal to the "consciousness" of every reader, the objector included, in support thereof.

I take pleasure in here adding the following from *The Logic of Introspection*, a most suggestive and very able work by the Rev. J. B. Wentworth, D.D.:

"Looking within, the arcana of my own mind, I think I see there evidences of the Divine inworking. I seem to myself to find there certain modes of Supernal Energy operating within me.—Facts, that are Supernatural, the result of a Divine Force acting upon my mind; a sense of God moving in and upon my mental being, and producing therein unique conscious phenomena; which, my reason beholding, it at once attributes to a Supernatural Source, and, by them, gains at once, not merely or especially, an *idea* of God, but a *vision* of God. . . . For, it seems plain to my reflective thinking, that God as positively enters the domain of human Consciousness, through the Religious or Spiritual faculties of man's nature, as that Matter or Body does, by means of the powers of Sense-perception. And, we may have as emphatic a subjective sense of the Divine Nature, as we have of Self, if we will but listen attent to the voices that speak to the ear of Spiritual Self-consciousness."

Memory.

The next characteristic of the human mind to which I desire to invite attention is memory. This is certainly one of the most useful, as well as one of the most interesting and wonderful faculties of the mind. It is not my purpose to enter into any discussion of the metaphysics or philosophy of memory, which might well occupy an entire chapter, or even an entire volume, but simply to direct attention

thereto, as a faculty of the mind which speaks in unmistakable language of an omnipotent Creator. Those who desire to study it critically can find an abundance of literature on the subject, and wide differences of opinion as regards abstract definitions —from Sir William Hamilton, who would consider it a *capacity** rather than a faculty, to Hopkins, McCosh, and Harris, who would consider it an actual *power* of the mind—but substantial agreement as regards its results.

The vast importance of memory must appear evident to any one who will consider it for a single moment. What were all the other faculties of the soul without memory? The intuitive power might perform its wondrous work, and formulate all those great fundamental principles of thought and knowledge of which we have been studying, and if there were no registration of them, if they could be given no permanency, there could be no extended use thereof for purposes of reflective thought or consecutive reasoning.

Moreover, we could never gain any valuable experience from all the information received through the senses. Sight, hearing, touch, taste — all the senses, might convey to us their normal impressions, but they would profit or please us only for the moment, and would be gone forever. No such word as "experience" would be needed in our vocabulary.

* *Metaphysics*, p. 414.

Consider what this means, and there dawns upon us some conception of what memory does for us even in its most ordinary exercise; some conception of what we should be without this faculty. The past an utter blank! Each moment gone beyond recall, with all that it brought us, as soon as the succeeding moment approaches! The thought is too cheerless to be entertained. And yet the wisest physiologist, or the most skillful chemist, has never succeeded in finding out what takes place in the mind by way of "registration" or "storing up;" and the profoundest philosopher has never satisfactorily explained it. Sufficient for us that this power exists, with all its manifold advantages.

Some writers have been inclined to discount the worth of memory as an intellectual faculty, holding that an unusually good memory indicates a lack of logical reasoning power. There may be some truth in this, but not necessarily. It is true that we often find a person of uncertain logical strength manifesting surprising readiness in retaining concrete facts and figures; but this does by no means signify that the ready memory is the *occasion* of the weak logical faculty, any more than unusually good eyesight in a person partially deaf signifies that the ready sight is the *occasion* of the poor hearing. It simply indicates that one faculty may be, by nature, superior to another in certain minds; or, what seems to me more probable, that one faculty has been culti-

vated more carefully than another, and the person has come to depend upon it, rather than the other, thus continuing to increase the disparity.

It has been held by some that every incident, impression, or fact, however trivial, of which the mind takes cognizance is retained, and at some future time will return to consciousness. That such is the case no one can be certain, but there are many well-known facts which seem to warrant this conclusion. These facts assure us that all our experiences *may* come back to us in every minutest detail, and that many of them certainly *will*. How this truth adds weight to the otherwise insignificant circumstances of life! Memory is an ever-present photographer, with cameras pointing in every direction through all the senses, and through consciousness as a whole; constantly shifting her scenes, and, with more than lightning speed, completing and storing away her negatives, to be brought out as occasion shall offer during advancing life; and, as we believe, to be brought out in their *completeness* after the close of life. How careful, then, should we be of our surroundings, and even of our thoughts! How we should treasure every ennobling truth, and every elevating opportunity! Emphatically true does it become, that every person builds his own dwelling, and adorns it for himself, and in it he must abide.

Surely, none but Divine Wisdom could have devised such a plan for the restraint of evil passions,

and the subduing of vain imaginations. The physical law of entail *does* hold in the mental world, in this particular at least.

Furthermore, we find in this faculty a cheering revelation of God in his benevolent attributes, when we consider how the joy and gladness of life are increased hereby. Not only is memory a powerful deterrent from wrong living and impure thinking, but an equally powerful incentive to right living and chaste thinking.

Moreover, we find that memory, under the training of good desires and a righteous will, retains most vividly and permanently the pleasant, satisfying experiences of life. Then, also, in childhood and youth, this faculty is specially active, and treasures up the bright and joyous incidents of glad young life with eager love, and makes them a never-failing source of comfort in after years.

What joy to the aged pilgrim to sit amid the lengthening shadows of earthly life, and allow thought to go back over the past! As memory, with her blessed resurrection power, does her characteristic work, his enfeebled frame becomes lithe and strong again, his broken voice resonant and full, his dimming vision clear, and, with every sense awake, and heart throbbing with young life, he is a boy again, mingling with unbounded gladness in the scenes of childhood; and, what is specially remarkable, as above suggested, he mingles in those scenes without the annoyances and

childhood trials which vexed his young spirit fifty years before. Only the brightest visions come back with full force.

What satisfaction to the mature scholar, who now enjoys the repose of conscious intellectual power, a position of established recognition, and a sure competency, to go back in thought over the days of his early intellectual struggles, in the midst, perhaps, of financial embarrassments! The vision rises before him in such soul-satisfying grandeur that he almost shouts aloud *again*, as he swings his hat with the rest in some glad hurrah over a class triumph, or *again* fervently thanks God, at the close of some final examination, that, amid all the embarrassments, he has been kept, and helped, and permitted to pass up. Above all the satisfaction of present honors, from his constituents, he counts those old college-day visions; and if ever his cheeks are wet with tears of joy over victories won they are caused to flow by old-time memories.

The same is true of the wealthy business man. More to him than his great factories or stores, more to him than even his palatial residence, with all its elegant appointments, are the pictures which memory paints of the first small business beginnings, and the first little cottage, with all the long series of struggles out of which the great fortune has come.

Now, when we take into account the absolutely

unexplainable nature of this faculty, which *some*how stores up the experiences of a life-time, and yet furnishes no trace of that "how" or the "where;" when we consider its immense practical importance, so great that without it we could not carry on any of the ordinary affairs of life successfully, and then add to these its bearing on the formation of character, and its service as the enhancer and perpetuator of our joys, memory stands out before us as a truly divine gift, even if *not* "*God's divinest gift*," and becomes an unmistakable revelation of God in man.

The quaint "proverbial philosopher" has said, "Memory, the daughter of Attention, is the meeting mother of Wisdom."

Imagination.

As the complement of memory, I now undertake a brief discussion of imagination. This faculty of the mind has been variously estimated by different writers of recognized ability, some considering it to be quite subordinate, and of decidedly little worth; others placing it among the higher and diviner gifts of the mind.

As to this comparative estimate I have no desire to dogmatize; but, considered in its essential character, this faculty certainly occupies a very important position, and performs a most important part in many of the higher employments of life; while, considered

with reference to the subject we have in hand, it takes very high rank.

In a certain sense it may be considered the creative faculty of the soul. Not in the sense that the imagination actually brings any thing into being from nothing, for only God himself can do this; but in that it creates, or puts into a form of mental concreteness, that which previously existed only in the faintest outlines, or the most shadowy suggestions—so faint and shadowy, indeed, as to have been invisible to a mind possessed of little imaginative power.

Herein lies the peculiar significance of this faculty as a revealer of God in man, namely, in that it approaches, to all intents and purposes, so near to the accomplishment of what the universal human consciousness declares to be possible only to divine power.

We walk into a celebrated picture gallery, and stand before a good copy of some ideal masterpiece, for example, "The Transfiguration." We study its general outline, and are attracted by its comprehensive boldness. Led on to a closer scrutiny, we carefully scan each form and figure. Our interest increases. We gaze upon the delineation of features, the lights and shadows, the reflected glory and the almost speaking gladness, and are enraptured while we gaze; and yet all this is merely an ideal picture, a creation of the imagination out of certain mental concepts obtained from reading.

We walk through some magnificent cathedral, and take note of its symmetrical proportions, its elaborate adornings, and its exquisite beauty of design as a *whole*, and when we stop to consider that all this, which, in its present concrete form, fills us with astonishment, must necessarily have existed in its entirety as an ideal form in the mind of the architect, who had never seen one like it, we gain a new conception of the creative power of the imagination, and see, a little more clearly, the image of God reflected in the "man of the draughting instruments."

We open some great poem, like the "Iliad" or "The Inferno," and as we read on, and one vision after another rises before our minds, in all its realistic beauty or ugliness — overflowing joy, or heart-breaking grief—we find ourselves saying, "This is history; this is true to the life; the writer must have *been there;*" but at the same time we know better. We know that all these are only intellectual images, imaginary personages and experiences, built of the stuff "dreams are made of." And yet how superbly, how naturally, how grandly—shall we not say, how divinely?—built!

Once more. Here stands a Sumner or a Gladstone, a Simpson or an Edwards, before eager thousands. He sways them—now as the ripening grain is swayed before the summer breeze, now as the forest trees before the mighty tempest. They weep, they laugh, they groan, they shout—they yield to doubt and fear,

or rise triumphant in spirit over every obstacle. What is the matter? What is this subtle power which moves men at the will of the orator? Not the imagination alone. Certainly not! And yet, strip every fact presented of every element contributed by this faculty to its elucidation, and you would look in vain for the manifestations so evident before.

Nor yet alone in these somewhat exceptional affairs of life is this faculty found performing its mission. Every-where, in all conversation and all social intercourse, in every occupation and condition of our changing existence, imagination has a place and a function. Not always a good place or a beneficent function, for any faculty may be depraved; and the purer, the more divine the normal, the more depraved the abnormal. But if, in its divinely intended exercise, it touches with the roseate tinge of beauty many otherwise dreary places in life, lays the hand of blessing upon many an otherwise unblessed head, pours the oil of joy into many a wounded heart, and heals, as with the magician's wand, a host of otherwise incurable ills, its perversions cannot invalidate its claims. Truly, that must be a dull and passionless soul which fails to recognize in this gentle, though powerful, this beautiful, though often hideous minister, a something *above* the earth, rather than *of* the earth, a very element of the divine, a heavenly messenger to man, dwelling within his

own breast, and inviting to almost endless improvement and cultivation.

Reason.

There are several other characteristics of the human mind which furnish a clear revelation of the Divinity within us, of which it would be pleasing to write, but these rapidly multiplying pages admonish me that the space which remains should be devoted to reflective knowledge or reason. This is the crowning distinction of the human intellect; this the very key-stone of that wonderful arch up toward which all the other faculties are ever building, and by which they all find their strength and completeness conserved. They are fundamental, it is true, and in that sense are of more vital consequence than this, but this occupies the place of proudest distinction and sublimest effort. The foundation stones would doubtless remain in position without the key-stone, but not so the key-stone itself. They would but very imperfectly perform the work intended, if left without it, but it, without them, would not be a key-stone at all. In and of itself reason can furnish nothing. It must ever be preceded by the intuitions and other fundamentals. Spontaneous knowledge always supplies the raw material on which reflective knowledge, or reason, may do its work, and out of which it may produce such new and beautiful forms as to constitute them genuine creations.

The timber in the forest and the ore in the mine are fundamentally essential, and we magnify their importance; but the majestic steamship, with her towering masts, and throbbing engines, and ribs of steel, is an essentially *new* creature, and as she speeds before the favoring breezes, or plows triumphantly through the angry billows full against the wildest tempests, we magnify her importance, and greet her as queen.

There are probably comparatively few persons who ever seriously consider what a remarkable complex of activities the process of reasoning actually is. Suggest to men in general the mastery of a system of logic, and nineteen out of every twenty will decline the undertaking. If not on the score of supposed inability, they will put you off with the plea of insufficient leisure for such extended study. And yet, every normal mind constantly thinks in accordance with *norms* or rules. In other words, every sane mind is a logical mind. All conversation is carried on on the basis of the logical syllogism; that is, all conversation which is worthy the name. I do not say that all genuine conversation conforms strictly to severe logical methods. This would be to affirm a perfection in the untrained multitudes which is seldom, if ever, found in the masters. But all genuine conversation or discussion is proceeded with on the basis of the syllogism. Very rarely do we state the complete syllogistic form in major and minor premise and

conclusion. Some one of these is almost uniformly left to silent inference; frequently even *two* of them. In this process of silent inference is seen one of the most wonderful elements of the reasoning power.

A dozen times in the course of a few sentences, a thousand times in an address of a half hour's duration, will this faculty do its work, and do it so deftly as not to betray its own existence, even to its possessor. Need we wonder that it sometimes falls into fallacies? The marvel is that there are not more frequent lapses.

To illustrate my meaning. You call on your neighbor and find her child ill. You learn that it is malignant diphtheria. You return home and are now saying, "Mary Smith is going to die," or words to that effect. This statement is an extremely bald one—has no look of logic about it. Your interested listeners do not have the faintest tought of even a suggested syllogism, nor are you conscious of logical inference going on, or having *gone* on in your mind. Yet there *has* been such a process going on, and you are talking syllogistically. How? From past experience you have come to the fixed conclusion that,

1. All malignant diphtheria is fatal. During your stay at your friend's house you became aware that,

2. Mary Smith has malignant diphtheria; and,

without any thought of inference or logical reasoning, or formulating a syllogism, you have come home, and are just now stating the logical conclusion of the above plain major and minor premises, namely,

3. "Mary Smith is going to die."

A mother sees her child about to clutch a hot coffee-pot, and *instantly* catches its hand away. Unless you have considered this matter before, you smile when I say that her mind, in that instant, passed through all the steps of a syllogism, and acted according to the most elaborate logic. Yet this is no more than the simple truth. With lightning-like rapidity—nay, more, "as quick as thought"—that mother's mind formulates the following:

1. Baby's hand is just about to touch that hot coffee-pot. 2. Every hand that touches a hot coffee-pot gets burned. 3. Therefore, Baby's hand is about to be burned.

But O, thou sluggish syllogism! Long before all thy "vain repetitions" of language *have* been, or *could* have been, spoken, baby's hand is safe—or perchance, into some other mischief.

Of the various methods of reasoning, demonstrative and probable, analytic and synthetic, or inductive and deductive, etc., we have not space to treat, except to state a few general principles.

Sir William Hamilton, in his *Philosophical Discussions*, makes the following very terse and comprehensive division of inductive and deductive reason-

ing, and the reader cannot do better than to fasten it firmly in mind:

"*Induction* holds that what belongs, or does not belong, to all the constituent parts, belongs or does not belong to the constituted whole. *Deduction*, holds that what belongs, or does not belong, to the containing whole, belongs, or does not belong, to each and all of the contained parts."

These, however, are but certain *methods* of handling truth; and, although worthy of all the attention which has been bestowed upon them, and perhaps deserving of much of the criticism, our chief interest must ever center in the examination of the fundamental criteria of reason. Even these we cannot here discuss, but would call attention to the two kinds or two great subdivisions of truths, namely, necessary and contingent. Necessary truths are truths the opposite of which is unthinkable. Contingent truths are truths the opposite of which might be. The latter may be as *certain* as the former, but they are not of necessity thus.

When, in our reasoning, we make use of only necessary truths, as, for example, the axioms of mathematics, we are reasoning demonstratively, and our conclusions are such that a sane mind *must* accept them, unless a flaw is found in the process. When we make use of contingent truths, it becomes only probable reasoning, and yet this may be as valid as the former. It cannot *command* assent, as can de-

monstrative reasoning, but it can so convince as to *win* assent, which shall be equally perfect, and prove much more influential upon the life.

When we compare the two as to their importance, taking into consideration the facts and circumstances with which human life has to deal, probable reasoning is placed greatly in the ascendency. This takes into consideration all of evidence, as found in human testimony, in human experience, and in that remarkable weapon of the apologist—analogy.

The triumphs of demonstrative reasoning, as seen in mathematics, wherein alone is found the strictly demonstrative process, are, after all, so largely contributed to by the intuitive faculty that this method loses much of its supposed glory. Moreover, the field is circumscribed in all directions, and admits of no extension.

Probable reasoning, on the contrary, knows no bounds but the limits of thought, seizes boldly upon all problems, of all science, and all history, grapples with every question of life and destiny, and calmly rests the issue in the balances of judgment.

But, of course, all this must be in accordance with certain well-established rules, or it amounts to nothing in the end. The mind must have a solid hold on what is *absolutely* known before reason can reach out into the unknown.

Those who have been unaccustomed to the reading of mental science will now appreciate more fully the

reason for so much space having been given to the establishment the claims of the fundamental conditions of all knowing.

It having been satisfactorily shown that "thought implies the existence of a thinking being, to whom the thought belongs;" that "quality implies a substantive existence in which it inheres;" that "whatever is perceived by the several senses exists, and substantially as perceived;" that "whatever is recalled by the memory did exist as remembered;" and that "consciousness, in general, makes a true and reliable report of our experience;" we are on solid ground as to primary facts. Certain fundamental judgments having also been satisfactorily settled, namely, that "every effect must have a cause;" that "all objects exist in space and time;" and that "space admits of various perfect and definite relations, both among objects and the different parts and positions of the same, as time does among events and the different periods of the same existence;" we are also on a firm foundation as to primary *truths*. The acceptance of these basal conditions is necessary to all science, to physical no less than to mental, since, unless these can be depended upon for this and all other planets, the astronomer and the theologian, the physicist and the metaphysician, may as well mingle their instruments and books in a common heap, and apply the torch. But they *can* be depended upon. The evidence is complete, and there rises before us the sub-

stantial structure of the *genuine* monistic philosophy. Resting upon these fundamentals the entire universe of thought becomes one.

Beholding the human reason binding together all other faculties of the mind, and satisfied that reason is the same every-where, we behold also the Infinite Reason binding together all the *faculties* (the laws, relations, and activities) of the universe. Here we discover the true doctrine of the "reign of law," of the unity of the universe. And how much more complete, and satisfactory to consciousness, is this conception than the materialistic! How it exalts law! As we gain this face-to-face view of God, through the help of the image within our own souls, we behold, not an orphaned universe ruled by dead Fate, but a Divinely created universe controlled by harmonious, loving law. The revelation stands out bold and clear. We accept it gratefully and rejoice therein.

With this conception of the divineness of reason, we no longer wonder at its marvelous achievements. To adequately notice these would involve the presentation of much that will necessarily come under review in Chapter VI; therefore I will avoid repetition by entirely omitting all such notice here.

Consideration of the will is deferred to the next chapter, as belonging more naturally to the moral nature.

What I have written is but a few meager hints, a few brief suggestions, of the almost infinite variety of

details lying all about us as we enter the domain of the human mind. But this fact only lends additional force to the argument; for, if in this imperfect presentation the revelation of God in man's mental characteristics shines forth so clearly, it cannot fail to appear absolutely unclouded to every reader who will be at the pains to follow out the lines of thought which have been merely suggested.

"Come one, come all! This rock shall fly
From its firm base as soon as I!"—*Scott's Fitz-James.*

"My nerveless will is like a traitorous second, and deserts my purpose in the very gap of need."—*Alexander Smith.*

"Conscience is a revelation of the Supreme God in man. And it brings man not only into converse with goodness, but relates him to it as the power which binds him in his daily life and would guide him to daily happiness."—*Tulloch.*

"The satisfaction in consciousness of all intelligent and sentient beings is the governing motive in all virtuous acts."—*Raymond.*

"Remorse is the pain of sin."—*Theodore Parker.*

"Here, here it lies: a lump of lead by day,
And in my short, distracted slumbers
The hag that haunts my dreams."—*Dryden.*

"Conscience, the torturer of the soul, unseen,
Does fiercely brandish a sharp scourge within.
Even you yourself to your own breast shall tell
Your crimes, and your own conscience be your hell."
—*Future State.*

"These, having not the law, are a law unto themselves."—*Paul.*

"I will put my law in their inward parts and write it in their hearts."—*Jehovah.*

"A guilty conscience is like a whirlpool drawing in all to itself which would otherwise pass by."—*Victor Hugo.*

CHAPTER V.

IN HIS WILL AND MORAL NATURE.

We have been considering in the last chapter man's mental characteristics. Among those characteristics the will occupies the most distinguished place. Over all the other faculties of the mind this faculty reigns supreme. As a sovereign he bears rule; and yet, as a sovereign among constituents.

I do not mean to say that the will, or indeed any other faculty, can be separated out as a distinct entity from the rest of the mind. The mind is *one*. It cannot be divided and subdivided into separate and independent powers. Much less, as some would teach, can these faculties be located in distinct portions of the brain. This sort of weighing and measuring, map-making and brain-surveying, is contrary to both good sense and sound psychology. But I do mean to say that in this one and indivisible whole, which we call mind, there are various faculties, each of which has something in itself which is *sui generis*, and therefore can be studied by itself, at least in its actions; and in its *nature*, as associated with the other constituent parts of the mind.

We have left the consideration of the will for the same chapter with the moral nature because of its

intimate connection therewith, which intimate and even fundamental connection will, I think, clearly appear before we have completed our argument.

I care not to enter upon a metaphysical discussion of the will, however interesting and profitable such discussion might prove, but simply wish to call attention to a few fundamental principles, and some of the more manifest revelations of God, in the exercise of this faculty. Many profound thinkers have written learnedly upon the will, and I can hardly add any thing.

Will has been variously defined, from the brief, bald, unsatisfactory definition of Edwards, namely, "The will is the power to choose," to the somewhat extended but almost equally unsatisfactory definition of Haven, namely, "I understand, by the will, that power which the mind has of determining or deciding what it will do, and of putting forth volitions accordingly. The will is the *power* of doing this; willing is the exercise of the power; volition is the deed, the thing done. The will is but another name for the executive power of the mind. Whatever we do intelligently and intentionally, whether it implies an exercise of the intellect, or of the feelings, or of both, that is an act of the will. All our voluntary, in distinction from our involuntary, movements of the body, and movements of mind, are the immediate results of the activity of the will."*

* *Mental Philosophy*, p. 520.

All of which is good as an *explanation*, but scarcely to the point as a definition, if intended as such, for the exact term which he is undertaking to define is used in the defining.

Coleridge says, "Will is that which originates action or state of being," but this, of course, comprehends too much, unless we pare down the term originates to less than half its generally accepted bulk, and then we are thrown into equal though opposite difficulties. Whedon says, "Will is that power of the soul by which it intentionally originates an act or state of being." This seems to us to meet the requirements of a logical definition, although it also has had many criticisms heaped upon it. Another form in which the same author puts it is: "Will is the power of the soul by which it is the conscious author of an intentional act." Dr. Upham defines will to be "The mental power or susceptibility by which we put forth volitions."

The truth is that nearly every writer on the will has some special theory in ethics to support, and his definitions, either consciously or unconsciously, bear the impress of that theory. Professor Harris gives a definition which, like that of Dr. Haven, is rather an explanation than definition. Still it is very excellent, and when I have given this I shall leave the reader to define will according to his own pleasure.

"The will is the power of a person, in the light of reason and with susceptibility to the influence of

rational motives, to determine the ends or objects to which he will direct his energy, and the exertion of his energy with reference to the determined end or object. The will is a person's power of self-determination. It is his power of determining the exercise of his own causal efficiency or energy. He can determine the end or object to which he will direct it; he can exert it or call it into action when he will; he can refrain from exerting it when he will. He has power of self-direction, self-exertion and self-restraint. This power is the will. Its function is, to determine the exercise of power. Its acts are determinations. We call it the power of self-determination."*

Now, whatever may be the special metaphysical definition of the will adopted by my readers, I am inclined to think that all will agree that the will, as a power, has in it an element of the Divine so manifest that an appeal to consciousness cannot fail to reveal it. The human will, as far as we are able to determine, acts in its creative capacity, within its human limits, after the same identical fashion, and with the same sort of freedom, as the divine will.

Endless as have been the controversies concerning the freedom of this faculty in action, I believe that if men would lay aside preconceived notions, and cease to press it into the service of some theological formula, there would soon be substantial harmony. An appeal to conscious experience, in any act requir-

* *Philosophical Basis of Theism*, p. 349.

ing an exercise of the will, teaches us clearly, metaphysics all aside, that there is presented to the mind in some form a desire, or a want, and the mind forms some notion as to how that desire can be gratified, or that want supplied, and forthwith the will proceeds to put forth such efforts as the mind says are necessary to that gratification or supply. Every man's consciousness tells him that in the putting forth of this effort the will acts in a distinctively creative capacity, acts identically as we must think of the Infinite Creator acting in his creative, or directive, processes. The difference between the two is quantitative and not qualitative. There are things which God himself cannot do. Let us, then, freely admit that man is placed under limitations, and not fear that in so doing we disrobe him of divinity.

God cannot make two and two equal five, or a given mass to be round and square at the same time and in the same sense, or north to be south at the same time and in the same place, or right to be wrong in regard to the same act under the same circumstances. And yet, one would almost conclude that certain metaphysicians were disposed to consider it necessary that *man* be shown to be capable of doing some of these things, or their equivalent, in order to maintain his place as a man. Mistaken theorists!

Those who endeavor to make this appear are, as a rule, men who desire to lay upon supernaturalism a burden which does not belong to it, by demanding

proof of something the very existence of which is not claimed.

We are offensively and patronizingly told that the universe is under law, and that man, being an integral factor in that universe, must come under its general laws; and that the will, being a part of the man, must be under *law*. As if we did not know, or were unwilling to admit the facts! But "law" is a very ambiguous term, and nothing pleases a controversialist with a poor case quite as well as a word which can be made to assume almost any meaning the user may choose.

In view of these facts, before we can proceed intelligently with the consideration of our subject, some attention must be given to this term. Law, properly understood, is every-where, and well deserves the high consideration accorded to it. No class of thinkers are more enthusiastic in its praise than theologians, and yet, one who confines his reading to the works of modern skeptical scientists would naturally conclude that theology had completely outlawed all law, and was running wild and frenzied in a domain all fanciful and marvelous, wherein nothing possessed any regularity; while physical science had become the conservator of all regulation, certainty, and law, and was maintaining not only the equilibrium of the material universe, but patiently striving to bring the universe of mind and morals into some sort of harmony in action and sentiment.

Long before the great modern revival of physical

science put into every body's mouth the praises of "natural law" the great Hooker declared: "Of law no less can be said than that her seat is the bosom of God, her voice the harmony of the world; all things in heaven and earth do her homage, the very least as feeling her care, the greatest as not exempted from her power, both angels and men and creatures of what condition soever, though each in different spheres and manner, yet all with uniform consent admiring her as the mother of their peace and joy." * And, all through the years of unparalleled progress which have since intervened, no class of men have so uniformly honored and reverenced general laws as theists.

Sir William Dawson says in plain and unambiguous language: "The creative work is itself a part of divine law, and this in a threefold aspect: first, the law of the divine will or purpose; second, the laws impressed on the medium or environment; third, the laws of the organism itself and of its continuous multiplication, either with or without modifications."

But, as already indicated, there is a wide difference between the meanings attached to this term by theists and anti-theists, as well as a striking contrast between the character of the language and argument made use of by these two classes. For example, we take up *The Dynamics of Nerve and Muscle*, by Charles Bland Radcliffe, and we find a most stilted exaltation of physical law, and a constant slurring of those who

* *Ecclesiastical Polity*, book i.

do not bow humbly at the shrine of naturalism. He concludes as follows: "Every thing is in opposition to the dogma which ascribes to nerve and muscle a life of which the state of action is the expression."

"*Dogma*" *indeed!* In the mind of such a writer, whose pages are literally teeming with the rankest assumption and assertion, every principle enunciated by a believer in revelation is "dogma," every opponent a "fanatic," and every genuine Christian a deluded follower of a still more deluded Leader.

The same author in a more recent work, *Vital Motion a Mode of Physical Motion*, says: "Every thing is in *flat contradiction* to the current doctrine of vital motion. Every thing tends to bring phenomena which have been regarded as exclusively vital under the dominion of physical law, to transmute vital motion into what proves to be nothing more than a *mere mode* of physical motion."

What have we here? A most characteristic and striking illustration of the absurd extremes to which a pet theory may carry a very learned man, if he constantly looks upon *one* side of all truths, and persistently shuts out all elements which would spoil his theory. And such illustrations are abundant; abundant among not merely the dabblers in physical science, from whom we should expect just such inconsiderateness, but also among those from whom we have a right to expect better judgment, and more conservative language.

One of the most characteristic marks of genuine scientific attainments is modesty. As a most gratifying change from the preceding, I quote the following from a Christian theist, Hermann Lotze, in a work of great erudition recently published (1884), entitled *Investigation:*

"In theoretical investigations of reality, we mean by a *law* the expression of the peculiar inward relation which exists between two facts and constitutes the ground at once of their conjunction and of the manner of this conjunction, and in every simple case there is but *one* law. The *rule*, on the other hand, prescribes a number of logical or mathematical operations of thought, by which we are so to combine our perceptions as to arrive at conclusions, which in their turn tally with reality; and there may be several such rules, all equally sound, for one and the same case. It is clear that not a few of the methods of procedure at present in vogue are mere rules; but, more than that, it remains an open question whether any one of the laws, which we believe ourselves to have discovered, really deserves the name. The ultimate criterion of sense-perception is to be found in sense itself."

The manifest modesty of this statement concerning law—*law!* the term which every fledgeling in physical science, and every novitiate in metaphysics, as well as the great materialists and pantheists, have first deified, and then fallen prostrate before in most adoring

worship—cannot but impress every careful thinker, coming as it does from a very prince among scientific men, and uttered as it was in the full light of the most recent revelations of applied science. It is but another striking illustration of the contrast existing between the genuine searcher after truth and the mere theorist, who, having formulated an hypothesis supposed to be new, or having caught up the echo of some popular thinker's formula, continues to nurse it, or re-echo it, determined to bring all the world to his criterion.

So far from its being true that Christian scholars, believing in man's sovereignty as a free moral agent because of this endowment of will, desire to invalidate the claims of law in its true sense, they fully realize, and constantly affirm, that law is necessary to that sovereignty; that *without* law all would be veriest chance, amounting to the worst sort of fatalism.

This fact is dwelt upon by many writers on mind and morals, and I can hardly conceive of scientific men remaining ignorant of the fact, unless it be because they ignore all books on mental and moral topics as unworthy the name of science, and so never examine them, much less read or study them. The following from Dr. Upham is only one of many similar declarations by authors on mental science of almost every phase of theological opinion:

"Law and liberty necessarily go together. If it could be shown that the will acts irrespective of any

determinate methods and principles of action, in other words, if laws were not in any sense predicable of the will, then it would, of course, follow that it is the subject of mere contingency and accident, which entirely and fully comes up to the utmost idea of fatality. And it would be found to be a fatalism of the worst kind; an unintelligent fatalism. But having shown that the will has its laws, we secure in that single fact the possibility of liberty which we could not have without it. We are, accordingly, in a situation in which the liberty of the will, that important and noble attribute of a morally accountable nature, is not necessarily excluded, which would certainly be the case, if the will were driven about hither and thither, without any possible foresight of what is liable to take place, and without any regularity of action. If there is perfect harmony in other parts of the mind there will be perfect freedom in the will."*

But I must not devote any further space to the consideration of this somewhat metaphysical phase of our subject. Thus much has seemed necessary, to the end that what may be said hereafter, and the inferences which shall be drawn, might rest on a sure and well-understood foundation.

With this view of the will as an "either-causal power," in the midst of all the conflicting circumstances and conditions of life, we gain new conceptions of the dignity of humanity, of its separateness

* *Mental Philosophy*, p. 505.

from all other earthly life, of the sacredness of duty, and of the immeasurable significance of that little word *ought*.

Even an imperfect recognition of this view led Kant to give way to his enthusiasm as follows: "Duty! thou great, sublime name! Thou dost not insinuate thyself by offering the pleasing and the popular, but thou commandest obedience. To move the will, thou dost not threaten and terrify, but simply settest forth a law, which of itself finds entrance into the soul; which even though disobeyed wins approval and reverence, if not obedience; before which the passions are silent, even though they work secretly against it."

And who that has moved much among men and taken note of their struggles and triumphs has not been led to similar thinking, even though he may never have put his thought into words?

Man, as an animal, is full of animal passions and appetites. If *only* an animal he would be entirely at their mercy. But endowed with will he restrains appetite and curbs passion, asserting his supremacy over not only every material, but every physiolegical force, and manifests forth the divinity which is within him. So important is the will that it has come to be regarded, in some sense, as the measure of the man. To say of a man, "He has a weak will," is to offer as your opinion that he is effeminate. "He is a brilliant fellow, but has no will of his own," is accepted as a

sure prophecy of failure; while "He is a slow thinker and a blundering speaker, but has a will like iron," is accepted as an almost certain prophecy of success. This is the universal verdict of mankind. Will is acknowledged to be an all-important faculty.

A man without will-power would descend to a level lower than the brutes. To a "*lower* level," because, with all the animal passions and appetites of brutes, he has not the natural brute instinct to preserve him from self-degradation.

Behold a man who, by the indulgence of an appetite for strong drink, has suffered the inevitable consequence—a weakened will! He has, perhaps, a generous, kindly, large-hearted nature. He has a wife and children whom he loves with all the wealth of affection possible to the human heart. He has a beautiful home, furnished with every comfort. He has a host of true and tried friends who regret, beyond expression, to see his downward course, and are ready to let the past be past and consider life as begun anew. He has been drinking to excess for years. His debauches have become prolonged and awful in the extreme, until finally *delirium tremens* have seized upon him, and after a severe illness he has recovered, and during his convalescence he has shed many bitter tears over his reckless and shameful debaucheries. Surrounded by the ennobling influences of his beautiful home, and encouraged by the abiding love of wife and children and the hearty assurances of his friends that he shall

be the same to them again as ever, if only he will let drink alone, he has signed a total abstinence pledge, and goes forth fully resolved never to touch nor taste the accursed stuff. I am supposing him to be trusting simply in himself; supposing him not to have taken his weakened will to Christ to have it made anew, in the obtaining of a regenerated nature. He remains firm for a little time, till the old appetite comes back again, or until some old crony invites him to take a social glass. He looks at, or thinks about, the drink, and all his past life comes up before him. Memory is as true as ever. He sees his recent condition of beastly drunkenness, and subsequent terrible illness. He sees the former disgrace and heart-breaking grief of his family, and their glad-hearted hopefulness, when, after his recovery, he over and over again begged their forgiveness and promised to never, *never* drink again. He sees the whole with a vividness almost supernatural, and his very soul abhors the drink, while his whole nature revolts against allowing a single drop to pass his lips; and yet, alas! his will destroyed, he yields, and drinks, and is soon a beast once more, wallowing in the mire.

In contrast with this only too common scene, behold the man who, from his earliest youth, has firmly set his will against not only inherited appetites and carnal passions, but also against adverse circumstances. We will suppose him born of a parentage both besotted and unclean; born in poverty and reared in

disgrace. He was surrounded during childhood by every influence calculated to corrupt, and eventually to destroy. But, as advancing boyhood developed into a kind of premature youth, he began to learn something of the former history of his parents; learned that his mother was the child of wealth and culture, and married his father as a young man of brilliant prospects but fast habits; learned that during ten years of wedded life they lived in luxury, and moved in good society, notwithstanding his father's wayward life, but that gradually the ruin came, so that *his* eyes never saw a sober father, or a chaste mother. Learning these facts, he resolved to rise above his surroundings and vindicate the family name and honor. Other boys around him spent their days in lazy strolls or lounging, and their nights in street mischief; he spent his days in earnest toil at any thing which would bring him an honest dime, and his nights in reading and study. Other boys spent their money for cigarettes, candy, and toys; he spent his for food and clothing, and an occasional book. Other young men began to drink, and frequent places of vice, and did all in their power to induce him to join them, making use of both coaxing and taunts; but, although inherited appetite gnawed, with what would seem resistless power to any ordinary youth, and his baser passions lured him on to go with them, he went not. There was ever a steady gleam in his eyes as they met the

eyes of his enticers, which led them finally to say, "It's no use. He is as stubborn as a mule." Other young men wore fine clothes, and boarded at expensive places, and sometimes made him feel that he was despised, but he pocketed every slight, ignored every supercilious snub, and, with face firm set as the face of fate, moved steadily on, never swerving a hair's-breadth from the determination, formed when a boy, to rise above his surroundings and vindicate the family name and honor. All blandishments of sin and all solicitations of ease were alike powerless to turn him from his chosen course. Sometimes they came in upon him like a flood, and it seemed for a time that all the hosts of darkness, combined together in hideous shapes of hereditary tendencies, and adverse circumstances, and fiendish associates, would drag him down despite all resistance; but out of all such times of awful crisis he came forth with unscathed soul, and with his will strengthened by conflict.

Behold him now as he moves, a prince among his peers! All the adornments of learning have been added to a character solidified by suffering and subdued by grace. In the midst of multitudes of friends and admirers, and abundantly supplied with all that an honestly earned fortune can secure, he moves modestly on, a mighty power in the community, a champion of every good cause, hailed as a benefactor everywhere, his very presence a strengthening benediction.

Who shall say that here is not a revelation of God in the human will? Who so blinded by the false lights of a preconceived theory as not to see the image? Who so deafened by the clangor of atheistical trumpets as not to hear the divine voice?

My readers know full well that this is no overdrawn fancy sketch, but one which has had its parallel in every Christian land. History is full of such bright examples. Our own America already furnishes many striking illustrations of this divinity within us, as seen in the winning of literary or scientific fame, and in the creation of great fortunes, by boys who had no capital with which to commence except a sound body and that indomitable energy, or will-power, which never confesses failure, but builds anew on the ashes of what seemed complete destruction, while weaker wills are whining over their ruin.

The super-sensual, or hyper-material nature of the will may further be seen in its power over all bodily and material forces.

Will can stand true to right against every adverse power, both within and without. We sometimes hear people *talk* of breaking the will by physical force. But, in reality, this is impossible; and this very fact, that it is contrary to consciousness to conceive of breaking a will with clubs, or binding it with chains, is presumptive proof of our position. You may break a man's skull with your clubs, and pound every bone that is breakable into shivers, and

as long as life lasts his will can assert itself against you, and defy your physical power. You may chain him fast to some lone rock, and permit starvation and exposure to do their destroying work; and though every physical force cries out against the will, though in the midst of his agonies you may offer him release if he will but speak a single word, which his *will* says shall *not* be spoken, he will remain silent. You may hold out to him the most tempting and savory food, while the gnawings of hunger are inexpressibly awful, and tell him he may eat to his fill if only that word be spoken, and still he will remain silent. Just when the most excruciating thirst of approaching death is upon him, you may hold within one inch of those parched lips a glass of purest water, and however loudly every physical force in all his body, every atom with all its "potency," every muscle with all its "dynamical power," every nerve with all its "conserved energy," every blood corpuscle with all its marvelous "appetencies," however loudly they may one and all cry out, beseeching the *will* to speak that word, and secure the life-giving water, the word will remain unspoken. Silent, of that word at least, those lips will grow cold in death, every physical force cease its action, and the all-conquering spirit, of which the will is the sovereign part, escapes not merely *your* chains but *all* chains, and rises superior to every restraining force.

Nor is this all. That same will, which cannot be

coerced by physical force, *can* itself coerce *all* those forces. It can say *yes*, as well as *no*. This is seen when the will compels any member of the body to do that against which every element of the bodily forces rebels; as, for example, when Cranmer thrust his hand into the flame, and held it there until it was entirely burned to a crisp. Consider just how every physical force would do its utmost to snatch the smarting, writhing, roasting hand from the flame! But will, for the sake of a deeply-grounded principle, said, "Stay where thou art, thou faithless hand," and stay it did, till it was no longer a part of Cranmer's body.

The long list of martyrs furnishes a multitude of examples of this uncoercible, yet coercing, power of the will; and every reader can readily call them to mind without citation.

I do not forget that in all these examples of Christian martyrdom there is to be considered the moral element, the sense of obligation; but, as will be subsequently pointed out, this largely inheres in the will, and cannot be separated therefrom. Piety alone, religiousness merely—ardent, eager, zealous love for Christ, no matter how genuine—never constituted a Latimer, a Ridley, or a Knox. With these, there must co-exist the inflexible will, to make up the martyr-spirit.

Nor need we go back to those early days to find examples thereof. This revelation of God in man is to be seen in many of the humbler walks of life, where self and all bodily desires and natural cravings are daily

restrained by the power of a noble will, acting for the good of others.

This hyper-material power of the will is also seen in its control over disease. Every physician has marked the workings of this power again and again, while numerous careful observers, not physicians, cannot have failed to note the same thing. I have not space for detailed instances, but they are every-where, and the reader's own observation can supply them. Volumes which read like romance have been written by grave and learned doctors, relating circumstances showing a mastery of the will over disease which seems really incredible. And yet the evidence is so explicit that it cannot be reasonably doubted.

I remark, in passing, that one of the bald fallacies of skeptical reasoning is the attempt to make this well-recognized fact serve as a proof of the identity, or sameness, of mind and matter. That a more contradictory proposition can scarcely be formulated, or a more egregious *non sequitur* be proposed, has been sufficiently shown in the previous chapter. Water is not necessarily a house because water extinguishes a fire which is burning up the house; which is perhaps about all that is necessary to say in reply to this sort of naturalistic *un*reason.

We come, however, to the fullest revelation of the divinity in man's will only when we consider its remarkable power over the other faculties of the soul and

over other men. The dignity and Godlikeness of "him who ruleth his own spirit" have long been acknowledged. The man who, under the severest provocation, feels the hot torrents of a naturally violent temper surging through his soul, and knows that he can give vent to his wrath if he choose, without harm to himself or his own interests, but who, from sheer force of will, says to the angry billows of foaming passion, "Peace, be still," proclaims, with eloquence all the more divine because silent, the sovereignty of will.

In its exhibitions of power over *other* minds it, however, *appears* more conspicuously. It appears thus in the orator who is called upon to speak to an audience not in sympathy with himself or his theme; perhaps even violently opposed to him. He takes the floor amid groans of derision and hisses of contempt. The crowd is angry and turbulent, but with calm dignity he begins. The gleam of his piercing eyes catches the eye of some of the most abusive, and they quail into silence. His voice begins to be heard, and there is something in it which is *more* than sound. There is an indwelling power which no one undertakes to explain, but which every body soon feels. Erelong, that surging, vindictive crowd becomes a respectful audience. His masterful will, going out through eye and voice, holds them, while his arguments and persuasions convince and move them, until, at the close, those who were ready to mob him before he began are eager to do his bid-

ding. Again and again have howling mobs, thirsting for blood, been thus subdued and controlled. Again and again have parliaments and senates, conventions and councils, which seemed determined not to treat a speaker with even decent courtesy, been compelled to listen to and respect him, by sheer power of indomitable will. The English House of Commons has been the theater of many a struggle which was almost solely a struggle of one will against a powerful majority.

Our own national council chambers have furnished the same pertinent illustrations. Hamilton, Clay, Webster, Sumner! What scenes of sublime will contests rise before the student of American history at the mere mention of such names!

This sovereign power also appears thus in the leader of armies. All the difference between a uniformly victorious general and a uniformly retreating one is often in that will-power which dominates other minds, which makes fighters of cowards, and turns poltroons into heroes.

Sheridan learns that disaster has come to his army. He puts spurs to his horse, and makes all possible haste to reach the scene of conflict. With every receding mile his determination to turn the tide of battle increases; so that, when he meets his subordinate commanders and their men in full retreat, his will is fixed to conquer or die. He compels them to halt, to re-form their broken lines, to arrest

the onward march of a powerful enemy flushed with victory—in a word, compels them to refuse to acknowledge themselves whipped, and whips the foe instead.

Grant takes a discouraged and demoralized army, in a time when the North is half paralyzed by unaccounted-for delays and purposeless campaigns, and the South is flushed with the hope of ultimate success, and with a resolute will goes to work. He puts into shape the men he has and gets more. He commences to advance, and holds his grip. Statesmen and other generals criticise and find fault, but he never falters. Mountains of difficulty which cannot be removed he tunnels. Obstacles which would terrify other men he rides triumphantly over. Finally, he brings every will into subjection to his own masterful will, and "On to Richmond" changes to "Richmond is ours."

Washington, born to wealth and luxury, and yet reared to honest toil and endowed with a sturdy will, lays down the surveyor's chain, and the peaceful pursuits of agricultural life, to accept the organization and command of the colonial armies. A well organized, perfectly disciplined, and thoroughly equipped army and navy are determined upon the subjugation of a few sparsely settled colonies, whose inhabitants are without military stores or money to purchase them, without soldiers or money to clothe them, and an almost measureless frontier, along which hostile savages hover, ready to join with tories in murder and

pillage. Worse than all these, there are men in places of influence and power, who are opposed to him at every step. And yet, with the majestic mien of conscious power, he moves straight forward from one crucial test to another, subduing traitorous hate here and stimulating disheartened loyalty there, by the same commanding, God-given power, until, with the scars of eight years of awful gloom and unequal conflict upon him, he receives the sword of Cornwallis at Yorktown.

Cromwell, the Hampden farmer, comes into English history apparently all unqualified, and full of incongruities; but we soon discover that there is a something within him which controls other men: a will which never quails, and always reigns supreme. Whether we behold him, early in his career, leading on his freshly recruited Ironsides in the skirmish at Winceby, or biding his time for a whole month round Musselburg and Calton Hill, awaiting with grim determination the opportune moment when, at Dunbar, he strikes down three thousand of Leslie's army, captures ten thousand, and sends the remaining thousands fleeing for their lives; or whether we behold him standing like adamant in the midst of contending factions and warring sections, disvolving parliaments and tottering thrones, we see the same sovereign *will;* the same divinity within puts its stamp on rough-jacketed plowman, Lord Lieutenant, and Protector of the Commonwealth.

One more example from the annals of war—Napoleon, the "Little Corporal." He rises out of absolute obscurity. He manifests great daring, and comes into prominence as a military leader. Indications of that marvelous control over other minds, which we are now seeking to illustrate, have already become conspicuous when his troops are called upon to stand before the Mamelukes at the battle of the Pyramids in Egypt, where they are seen in all their grandeur. The French army was inferior in numbers, and formed in separate squares. The Mamelukes charged upon them with impetuous fury again and again. With bayonets and with horses, with every conceivable means, and with the most reckless daring, they strove to break those squares; but in vain. Napoleon was in the midst of his men, and swerved not. The one inflexible will infused itself into all others and made them *adamant.* The same power is seen at Austerlitz, and on many another bloody field, and finally at Waterloo. But *here*, Greek met Greek. Another will, as stubborn and even more powerful than his own, was opposed to his. Here occurred one of the sublimest will-fights in all military history. The "Invincible Bonaparte" and the "Iron Duke!" All subsequent history changed by the quality of one human will! The proud conqueror of all the armies he has ever grappled with seeks the conquest of the whole of Europe, and the world. In his way stands a will, mighty to control itself and others. The story has been too

well and too often told to need repetition. The "Iron" yields not! The mightier will abides, the weaker flees!

The writer does not, of course, suppose that in any of these examples of the control of one will over another, *will* was the *only* element; or that in these military contests the leader was the *only* factor, and deserving of all the credit. To suppose this would be folly; and yet, in the central power of one sovereign will was the mainspring of action in all these contests.

This same mastery of will over other minds is seen in all the walks of life. Here is a public school, in a rough, hard neighborhood. The district has long been a terror to public school teachers. Last October a frail little fellow was employed. When he came into the neighborhood, a stranger, every body that saw him said, "Why, *he* can't manage our school! The big boys will turn him out of doors in less than a week." And the "big boys" were all on hand the first morning with that exact intention. But there was something in the *appearance* of the quiet little fellow that caused them to wait a little, just to "see what he was like." There was a directness, a precision, a calm assurance about his words, and in his movements, that made him seem "bigger than his inches."

Many grave consultations were held during the intermissions of the first day, and around the "four

corners" in the evening. But two or three burly fellows declared that they "were not to be domineered over by a pale-faced boy like *him*." Accordingly, the next day they took occasion to place themselves squarely in conflict with the teacher's plainly expressed authority, and were called to an account before the whole school. At first they were not only unyielding, but offensively rebellious; but the steady gleam of those eyes which at a distance seemed so mild, the firm tones of that voice which heretofore had sounded so weak, the consciousness of mastery which seemed to show itself in every feature of that pale though rigid face, were too much for them. Any one of them could have picked him up and thrown him out of the window without much effort, but their brawny muscles were of no sort of use in such a conflict, and they simply submitted, they knew not why. That night at the rendezvous matters were discussed again, and the vanquished heroes of the previous evening said, "We don't know what it is, but there is something in our little teacher that we don't want to tackle again," and so they all concluded. But my readers know what it was. It was the image of God as seen in a powerful will; a clear revelation of that Creator who formed man in his own likeness, and gave mind dominion over all matter—and the more powerful mind a measure of control over the weaker.

Every observer of men and things has taken note of this mastery of the more powerful will in all the rela-

tions of life. The child, bent on doing that which parental authority forbids, looks squarely into the parental *eyes* to see if it is safe to venture, and acts accordingly. He may be deceived, but will generally take a very just measure of the will through those soul-windows.

The hardened highwayman, who would be supposed to fear *nothing*, and certainly not the face of a fellow-man, has often been known to quail before the piercing eye of an intended victim, simply because he saw within him a power against which he dared not array himself.

If we turn to general literature for information, we find that every writer of any prominence, in all the domain of history, biography, travel, or fiction, no matter what his theological or ethical theories, has exalted the dignity of the human will; but I must not indulge in even the briefest references thereto, but leave this specific subject, to take up the moral nature.

THE MORAL NATURE.

If we were just commencing to look for a revelation of God in man, and were about to consider "The Moral Nature," it might be necessary to pause at the outset to prove that man *has* a moral nature. But after what has been already written this can hardly be requisite, unless it be to simply indicate in a general manner the method of such proof, or, more strictly speaking, the great outlines. The will bears

such an important part in all considerations of the moral nature that the whole chapter may properly be considered as pertaining to morals.

The words duty, ought, obligation, etc., or their equivalents, are absolutely necessary to any discussion of moral character, and these all find themselves joined *some*how to will. And yet there is a somewhat in the moral nature which is over and above, or at least outside of and beyond, the will alone.

We cannot express in words what it is desired here to convey. And this very unvoiceable character of this element itself furnishes a hint of just what we hope to indicate a little more clearly, as we pass along. The acutest thinkers, and the foremost masters of human language in all its subtlest forms, have striven in vain to *define* a *moral idea*. This class of thinkers and writers do not profess to actually define it, but simply strive to come at some sort of an understanding of what they shall consent to consider it. Occasionally some fledgeling can tell us perfectly all about it, and offer a definition which is comprehensively exact and exactly comprehensive!

We can investigate a moral *action*, within certain limits, as a student can examine a human body, but even as he comes ultimately to a something, or a somewhat, which his scalpel cannot cut, or his microscope see, or his chemistry analyze, so do we come at last to a faculty, a spiritual entity, for which we as yet have no satisfactory word-dress. That the

moral quality of the action is not in the overt act is sufficiently evident. This is the part of the supposed moral action which comes first under our notice.

Previous to the overt act there must have been in the mind of the actor a complete image or conception of his act. But it is not in this second part which comes under our notice that the moral quality resides, for this is merely the action, existing as a conception, awaiting actualization. Nor can we discover this moral quality for which we are seeking even in the determination to materialize that conception, if we look upon the determination simply as a resolve to do it as a mere *action* without reference to the effect. But when we trace the overt act back thus through the mental image, and the determination to materialize it to the *purpose* of the determination, here we find the moral quality which we denominate good or bad. No matter what the outward action, as far as the *moral* quality of the actor is concerned, but what was his *intent*. An illustration may serve to more clearly bring out my meaning:

1. A man resolves to kindle a fire. (Here we have the purpose formed.)

2. His mind forms an image of the fire. (Here we have the conception of the act.)

3. He kindles the fire, and it burns as expected. (Here is the overt act.)

But thus far the reader cannot decide what quality

of moral action I am supposing. He needs to know the motive of the kindling. Let him shut this book without looking any farther, and he will remain in perfect ignorance of the *moral* quality in the supposed case. But when he reads on, and finds me saying that I have in mind a man resolving upon, conceiving of, and actually *kindling* a fire to burn up his neighbor's barn, he at once says, "The action was bad." Had it been that he was building a fire to warm some poor suffering body, he would have *as* quickly said, "The action was good."

And yet he cannot *define* it. The decision is rendered. You ask him why he decided the one action to be good and the other bad, and if he is a blunt fellow he will probably ask you if *you take him to be a fool!* If he is inclined to be philosophical he may undertake to explain himself, and possibly may make the matter clear; but the blunt fellow is, after all, about right. The rugged, native sense is clearest on these questions, because they belong to a domain which the dialectician's tools will not touch. Every normal mind says, "Hands off. Unless you take me for a fool, don't insinuate that I don't know right from wrong."

This is one of the most fundamental ideas of the mind. It is not *derived* by some process of education, or arrived at by methods of logical inference. Of course, it may be developed by education, and

strengthened by inference, but developing a seed and implanting the germ are two widely differing pieces of work. This spontaneous judgment upon the intent of an action cannot be accounted for in any other way than by admitting that it is an absolutely original element of our nature. Whence did it come? We do not find it in brutes, no matter how highly developed their physical organism. We do not even *look* for it. Why not?

A horse is left standing near a valuable young tree and gnaws the whole top off. We do not call the horse wicked or malicious. No question as to whether or not he had a grudge against the owner enters our minds. We find a similar tree mutilated by human hands, and at once the question arises, "What did he do that for?" Also as between human actions this same spontaneous judgment makes perfect selection; pronouncing upon some, and utterly oblivious to others.

In passing certain railway tracks I see a switchman shove the lever, and think nothing of it as a moral action. It is what I see him doing almost every day. But some day I see him shove the same lever, and open the switch, just as a train heavily loaded with passengers is coming at full speed, and immediately I say, "What did he do it for? Was it a mistake, or done on purpose?"

I look out of my study window, and see a man walking through the blinding snow-storm. No ques-

tion arises as to the moral quality of the walking. But suppose some one says to me, "That man has just heard of a family, ten blocks away, who are in great need, and he is carrying them food and money." At once something within me says, "What a good deed!" The storm is no worse than it was before my friend informed me of the facts, and he does not walk any differently; and yet, this definitionless faculty within me did not even make me aware of its existence before, but now it causes my whole nature to go out toward the kind-hearted, unselfish man who will face such a storm to give of his food and money to strangers in need.

Now, while we cannot fully explain or satisfactorily define the moral idea or faculty, we are privileged to seek for the ground of its existence. This search is full of interest, and has occupied the thought of many of the best minds in all ages. All are agreed that it must rest on the notion of obligation or oughtness, and while this only shifts the question the shift is of value, inasmuch as it gives us a term on the etymology of which we can be in substantial harmony.

If we consult Hobbes we find him laying down as the foundation of all obligation the civil law. But he manufactures his "civil law" out of the absolute selfishness of men, among whom there is simply a combination for the greatest possible self-gratifica-

tion and protection, wherein "acknowledgment of power is called honor."

This, of course, is the most arbitrary despotism. An absolute despotism in morals is a far worse anomaly than in civil affairs, and it seems strange that both could enchain as many bodies and minds as they have at certain periods of history.

Turning from this first modern theory of obligation, we notice a second theory which is quite extensively held at the present day, and which professes to exalt God and the divine law, very much as the theory of Hobbes professed to exalt the state and the civil law; and with very much the same result. This theory says we must obey God simply because he *commands* us to obey him; that it is right to act in a given manner simply and solely because divine authority says so; that the ultimate ground of all obligation is the will of God. Whatever God wills is right *because* he wills it. This theory really appears well. It seems to meet the demands of normal thought. All theists grant that the will of God must and should be obeyed. All grant that it is, or *ought* to be, sufficient for the determining of the course of any and every true believer in God, to know the divine will in the case. But this is far from being the same as granting that a thing is right *simply* or *solely* because God wills it. The seeming is untrue to the inner consciousness after all, and is only a sort of verbal

trueness. There must be something back of even the divine will. The mind refuses to rest satisfied without postulating this something. Having thus exercised faith in this invisible, undefinable something, the Christian believer, at least, and, I am inclined to think, every theist, says, "God wills it because it is right," rather than "It is right because God wills it;" although in practical ethics both amount to the same, for the divine will is always right.

Other theories place the ultimate ground of obligation in self-interest, as Paley;—in Order, as Jouffroy;—in the *true nature of things*, as Wollaston;—or in the relations we sustain to one another and to God, as Wayland. The last named author sums up the explanation of his theory as follows: "Hence we see that two things are necessary in order to constitute any being a moral agent. They are, first, that he possess an intellectual power, by which he can understand the relation in which he stands to the beings by whom he is surrounded; secondly, that he possess a moral power, by which the feeling of obligation is suggested to him as soon as the relation in which he stands is understood. This is sufficient to render him a moral agent."

This is all true and good as far as it goes; but, as with the "right-is-right-because-God-wills-it" theory, there must be something back of these "relations" to account for the oughtness springing out of them.

The theories of Dr. Haven and Dr. McCosh are full of suggestive truth, and deserving of notice, but I must forego the pleasure of examining them here; for it is not our present business to enter upon a metaphysical discussion of morals, or a theoretical analysis of man's moral nature, but simply to examine it as it is, and see what elements of the God-consciousness we can find therein.

In this examination we need to keep distinctly before our minds the conditions of moral law as distinguished from physical law, or law in general. This word "law" is so much used at the present day, and so carelessly, that those who desire to be understood need to constantly guard themselves in its employment. Considerable attention was given it when speaking of the will, but in reference to the moral law even greater care is necessary.

Under this general term the enemies of supernaturalism would range not merely the ordinary movements of society and nations, but the moral principles and characteristics of individuals.

In every possible way do our opponents endeavor to make it appear that law, one and the same, forever uniform and changeless, has from all eternity controlled, and will forever control, even the *morals* of this and all other worlds.

We are willing to meet them on the common ground of law—and perhaps may agree, provided they will consent to a proper division of law into

what Dr. Hopkins call the "laws of things and of persons," whatever terms we may agree to distinguish them by.

"Laws are of two kinds—of things and of persons. They are those in accordance with which things are controlled, and those addressed to persons. Under the first, the sequences are uniform, and, so far as the human will is concerned, necessary. Under the second, there is an alternative presented to beings endowed with reason and free-will. They may obey or they may disobey. Between these two kinds of laws the differences are radical. Under the first, the subject does not understand the law, knows nothing of the end proposed, is not capable of choosing it, is under no obligation to choose it, and has not control of the force requisite for its attainment. It is passive, and its movements are necessitated. It is only in an improper sense, or figuratively, that rules in accordance with which beings thus unconscious are controlled can be called laws. The most striking ground of analogy between these two classes of laws and the basis of their common name is in their results. This is order. Uniformity, and thus order, *must* be the result of the first class of laws; it is the result of the second when obeyed. Of the first class of laws, the laws of things, there are several kinds, as physical, vital, mental; all having, however, the characteristics above mentioned. In all there is a force uniformly directed to an end. Up to a cer-

tain point the mind itself is as much subject to this class of laws as is matter. These laws, or rather the uniformities which are their exponent, are at the basis of experience, are the condition of education, and of that intelligent activity by which means are adapted to ends.

"The second class of laws, or laws of persons, are obeyed consciously. The subjects of them understand the law, are capable of choosing the end it proposes, are under obligation to choose it, and have at their own control the force requisite for its attainment. Under this class law is not merely a rule regulating force and producing uniformity, or as some less accurately say, the uniformity itself; but, as designating the end, it is directive. It is also imperative. That, however, which makes it to be law is the fact that it is *obligatory*. An end may be designated, we may be commanded to attain or accomplish it, but if there *be* no *obligation* there is no law." *

It seems decidedly strange that men possessing acuteness of analytic power, and extensive learning, should ever miss these manifest distinctions. And yet we must conclude that they either actually do fail to see them or are dishonest. The latter we do not propose to charge without conclusive proof. As Mr. Buckle says concerning the essentials of morals, so say we concerning these essential distinctions in

* *Law of Love*, p. 33.

laws, "They have been known for thousands of years," * howbeit, some of our modern savants in philosophical science seem not to have heard about them. Why, even in the old Grecian works on ethics there may be found numerous and very clear indications of the firm conviction of a law of the spirit which was above the law of the flesh, a sturdy faith in the absolute power of mind over body.

As an illustration, we look at the scene in Socrates's cell, as he lies securely chained and awaiting his sentence. His friends are permitted to visit and converse with him. As one enters he says, "What brings you here?" His friend, unwilling to speak the awful words, replies, "I come with serious news." To which the old hero answers, "Ah! the ship is returned from Delos, and I am to die to-day." "No! not to-day, but to-morrow or next day. I, however, have come to tell you that all is arranged for your escape; and for the credit of your friends and of the city, as well as for the sake of your wife and children, you must get up and flee with me." "No! Unless the law releases me I stay. The laws protected my birth, my growth, my marriage, and my whole life. They now command my death. Did I save my life by breaking them, and did I, like a runaway slave, find quarter somewhere, I should be haunted by the ghosts of the laws of my country, on which I had laid

* *History of Civilization*, vol. i, p. 129.

guilty hands." He remained in prison and his chains were taken off. We see him sitting on his prison bed a willing captive in some sense. He would not escape when his friends had every thing arranged for his flight, and when, probably, even his enemies would have been glad to be rid of the execution without reversing the decree. We hear him as he sits there teaching philosophy, setting forth the principle of the mind's control over the body, and also the power of moral obligation over mind. He says, "Men who pretend to account for things by telling you that they are formed thus, and thus, seem to me like a man whom I should ask to tell me why I am sitting bent here on this bed edge, and who should reply, 'Because, O Socrates, the muscles and the nerves are bent so, and bend the bones so, and therefore you are sitting there so.' Nay, nay, that is no explanation. When you"—speaking to Crito—"proposed my escape, had I been possessed with the thought that it was right to escape, *that thought* would have carried off the bones, muscles, and nerves, and at this moment the whole of them would have been in Megara or somewhere else, not here. But I was possessed with the thought that it was right to abide the course of law; and that thought was the true cause of my being seated here."

Socrates was ever speaking of the *daimon* which dwelt within him, and which directed all his words and acts. The very head and front of his offending

was the claim to this indwelling divinity which moderns call "conscience," or the "inward voice." He believed in a *personality*, which is an absolutely essential condition of a moral being. And if personality is absolutely essential to man, to constitute him a moral being, we cannot think of the Supreme Agent in the universe otherwise than as a personality or person, for we cannot think of him as below man in the scale of being, or as any thing less than a moral agent.

Man having set before him a supreme end to be attained, as every person *has*, and having the mental ability to discern that "end," urged on to the attaining of that "end" by the true, the beautiful, and the good, is conscious within himself that he may choose to attain that end, or some other, according as he pleases, and he is likewise conscious that he must choose *some* end, and that he is responsible for the choice. This brings again into view another essential condition of a moral being; namely, freedom. He is also conscious that his quality or character will depend upon his choice.

Thus is he consciously made the arbiter of his own destiny, and is exalted above the material universe and all the brute creation, becoming a conscious partaker of the divine nature, a law unto himself, a co-worker with God in bringing to pass the ends and processes of moral government under moral law.

It matters not how humble a place he may fill, his supreme dignity is assured.

In fact, it is only when men have become unnaturally blind that they fail to see the broad distinctions between physical and moral law, the vast superiority of mind over matter, the supreme dignity of the moral faculties, and to ultimately behold the indwelling God.

According to the psalmist, "The fool hath said in his heart, There is no God." I do not stigmatize non-theists as fools, in the common acceptation of that term, but I have been very much interested in a work by Helvetius, translated from the French by Hooper in 1810, entitled, *A Treatise on Man, His Intellectual Faculties and His Education*, in which he quaintly and vigorously exposes the follies of pseudo-science and stilted philosophy, saying many things which should be read by the "popular science" writers of to-day. In one paragraph he says: "Man is born ignorant; he is *not* born a fool; and it is not even without labor that he is made one. To be such, and to be able to extinguish in himself his natural lights, art and methods must be used; instruction must heap on him error upon error; the more he reads, the more numerous must be the prejudices which he contracts. The ignorant man is as much above the falsely learned as he is below him of real science. The aim of bigotry is to blind mankind, and bewilder them in a labyrinth of false science."

I wish the reader to understand that I am not pleading for less of science, or less of mental discipline, to the end that the moral nature may be proportionately exalted, and "crude conscience," or "unquestioning intuitions," as some please to phrase it, may have completer sway. This charge is sometimes made against those who magnify the importance of the "inner voice," but without reason, for the history of intellectual progress shows that no class of men has furthered that progress as substantially as those who thus do. This charge is "after a piece" with the silly slurs indulged in by certain *smart* infidels against "blind faith," "unreasoning conscience," etc.; when every candid and careful thinker knows that faith is at the very foundation of even material progress, and without it no substantial advances could be made in literature or science, in society or state, any more than in the Church. As Winchell very aptly says in summing up a masterful scientific work, "Faith is the logical corollary of science and the highest flight of reason."

Conscience.

We have been glancing somewhat hurriedly at the bolder outlines of morals, with no intention of entering into a systematic discussion, but now we desire to look a little more closely at conscience. To enter upon a careful examination would require an entire volume. Sufficient for our purpose if we obtain a

view amounting to clear recognition, without the metaphysics of the subject.

We care little for definitions as such, and yet it is interesting to notice a few. Wayland says: "By conscience is meant that faculty by which we discern the moral quality of actions, and by which we are capable of certain affections in respect to this quality."

Joseph Cook says: "Conscience is that faculty which makes a man feel mean when he means to be mean."

Dr. Hopkins says: "Conscience is the moral consciousness of man in view of his own actions as related to moral law. It is a testifying state. As the name imports, it is a double knowledge: a knowledge by the man of himself together with a knowledge of the law and as related to that. It involves a recognition by the person of the moral quality of his own acts, and the feelings consequent upon such recognition. It affirms obligation before the act, approves or disapproves after the act, and in doing this indicates future reward and punishment."

Now, if we carefully examine these and a dozen other definitions, more or less comprehensive, we cannot fail of reaching the conclusion that they are all aiming at one central idea; namely, that of an inward monitor which makes use of the word *ought*. The complication of language, the multiplication of

words, the endless contentions, arise largely from two causes: first, the desire of every writer to use a different phraseology than all previous writers, so as to be considered "*original*," and secondly, the desire to somehow fit human speech to a faculty to which we should be willing to accord a place above all human language.

Just as the deepest emotions of the soul are voiceless, so also the divinest faculties refuse to be defined. But we are after a look at the *facts* of conscience, and not its word-clothing. That they *are* facts, and not fancies, entities, as truly as though they could be weighed and measured, clearly appears to every one, and, if illustration or argument were thought necessary, might be readily made out from what has been already indicated in these pages.

Absolute trust in our own consciousness is necessary to the establishment of any position in either science or philosophy. If when my mental consciousness tells me that two and two make four I am *sure* it tells me the truth, I am equally *sure* that my moral consciousness tells me the truth when it tells me that it is wrong to commit murder. I may not be able to explain the *how* of either conclusion, but the *fact* is there in both cases, and is a fact of universal consciousness. As such I have a right to assume its truth for all other men, and for all other worlds.

Just as all geological and all archæological research leads to the conclusion that man is the ultimate, the completed fact in creation, so does all psychology plainly teach that among the various faculties of the soul the moral faculty is ultimate—*authoritative*—SUPREME.

A man does not need to study theoretical ethics in order to discern the difference between right and wrong. He cares little for the latest deliverances of dynamical sociology when it comes to deciding concerning an unprovoked and brutal assault upon an innocent man. A person may not know even the meaning of ethics, or be able to spell the word conscience correctly, but when he sees a chance to steal, without any possibility of detection, and he is tempted to the act, his conscience tells him it is wrong, and he knows it tells the truth.

It is folly for the objector to urge that there are uncertainties here because some men, in a low state of civilization, lie, and steal, and commit all manner of iniquity without any apparent self-condemnation; for we do not claim an infallible conscience, or an unperverted moral consciousness, any more than we claim an infallible reason, or an unperverted intellect. As well might they refuse to believe in the existence of reason because some men are destitute thereof, or undertake to argue that nobody could see because there are some men born blind.

The great Leibnitz says, "If our immediate in-

ternal experience could possibly deceive us, there could no longer be for us any truth of fact; nay, nor any truth of reason."

One serious mistake which some thinkers make is that of supposing us to attribute to conscience a *compelling* power which is irresistible. This is farthest from our thought. Conscience *does* have authority, authority which is original and imperative, grounded in the very innermost sanctuary of our being. If we disobey that authority we suffer. And yet—let the reader take note—and yet we *may* disobey it. Here is another universal fact of mental consciousness, and one which proclaims man's will free; for every man says within himself, "I can do wrong if I please." Hence it is no argument against the existence, or even the fullest activity, of a conscience within an individual, that he does wrong.

Professor Bowne, in *Studies in Theism*, gives some very lucid paragraphs bearing on this matter, which I must quote: "Any thing may, and must, be sacrificed rather than violate the sanctity of conscience. Thus the moral law appears in our lives as an unconditional imperative, commanding and giving no reasons. . . . But this law, like all other laws, must justify itself to our reason. This instinct, barely as instinct, may rule the life until reason comes; but then it must give some account of itself. . . . The law of a being depends on its destiny and flows from it. . . . Any law which any being is under obligation to obey must

be a law contrived for its highest good; and if it appear that any law runs counter to our true good that law ceases to have any obligation, both reason and conscience being judges. . . . We do not mean that, practically, men measure duty by utility, or are constantly asking, What shall we have therefore? But while we may in practice command obedience without asking reasons, we must in theory always be able to give reasons. Otherwise our command is irrational and arbitrary. Without doubt the stand-point of practical morals is that of command; but theoretical morals must furnish some justification of the command. What, then, is the authority and meaning of this moral law, which disturbs our lives, crosses our plans, and mars our peace? Christianity gives an answer. It says that we are under a law too big for the earthly life, because our real life is not measured by our earthly existence. This life is but the beginning, and not the end. It reveals this life as photographing itself indelibly upon the life to come. It tells of moral development and dignity beyond all thought at present. We are called to communion with God. We are called to be like God. We are called to eternal life with God. This is our destiny, and our law is correspondingly great. Whatever conflicts with this destiny must be trodden under foot. Hence, when hand or foot offends, we must cut it off and cast it from us. Hence we are to struggle and agonize to enter into life; for

the gain of the world were nothing if the soul were lost. At once we see the tremendous significance of action and the baseness of surrender to the brute within us. . . . Christianity gives a reason for the moral law, and justifies it to our intelligence." *

We should ever, in all our estimates of the supreme authority of conscience within its sphere, keep carefully in mind the fact that conscience needs the light of revelation, in order to its quickening and normal development. With equal carefulness should we keep in mind the fact that no amount of culture, even Christian culture, can bring the conscience to such a degree of perfection as not to need the guidance of the Word. A failure to attend to the latter is even more pernicious than failure in the former. Let no reader conclude that, because the present writer exalts the guiding power and the authoritative character of conscience, he gives any countenance to the wild dreams of that fanaticism, or mysticism, which professes to have an inner guide which is wise above all that has ever been written, and by which its possessors become a law unto themselves, in the sense that the transgression of all other laws, both human and divine, may become sacred duty. I believe, with Joseph Cook, that "to substitute the Christian consciousness, in any sense, for adequately attested revelation and the scientific study of it

* *Studies in Theism*, p. 433.

is the wildest insanity, and maintain that only the strictly self-evident truths, only the axiomatic principles of reason, only the plain deliverances of our organic instincts are to be taken as God's voice within us."

But these are to *be* thus taken, and they are always there, an abiding revelation of God within ourselves. I say they are always there, and they speak to us with unerring certainty, approving when we do the right according as it is revealed to us as right, and condemning when we do wrong through conscious wrong intent.

Moreover, this same conscience causes us to expect these results to follow invariably upon our intentionally right or wrong acts. We are sure of the joy of self-approval for the one, and sure of the remorse of self-condemnation for the other. From Herod down to Wilkes Booth, conscience speaks the same language. Before one there comes the bloody head of the great fore-runner, speaking with ghastly lips of the awful deed, and causing him to grow pale and tremble, though surrounded by every possible protection. Before the other, in his dying hour, there stands the great emancipator of four millions of slaves, and in awful tones cries, "Blood, blood!" until the agonized wretch lifts his almost pulseless hands, and with hoarse voice and starting eyes repeats, "Blood, blood!"

It is said that after the fearful St. Bartholomew

massacre sound sleep never came to Charles IX. of France, but all his nights were nights of horrid visions and unnatural sounds. How true to this history is Shakespeare's

> "*Macb.* Still it cried, Sleep no more! to all the house:
> Glamis hath murder'd sleep; and therefore Cawdor
> Shall sleep no more, Macbeth shall sleep no more!"

Bessus murdered his father, and years afterward, when no suspicion had fastened upon him as the author of the deed, openly confessed the crime, declaring that even the "birds were constantly publishing it:"

> "Each bush doth seem an officer."

Both ancient and contemporary history lead us to conclude that every unhung murderer is saying to himself,

> "My conscience has a thousand tongues;"

for many have voluntarily confessed their guilt by word or manner. I do not believe that, without exception, "murder will out," but the existence of the proverb speaks significantly to our point.

Nor are murderers the only ones whom conscience tortures. Hobbes, the skeptic, though as brazen as the modern infidel when in public, could not endure seclusion; did not *dare* to remain anywhere in the dark. John Randolph of Roanoke could trample on conscience while in active life, but in the

silence of his own room, and in the presence of death, was constrained to give it voice in the words, "*Remorse!* REMORSE!"

We also find genuine satisfaction in the certainty of these results to others, and rejoice when we see the noble deeds of self-sacrificing men rewarded, and the iniquitous deeds of base and selfish men punished. The fact that a thrill of satisfaction runs through every soul when such rewards are bestowed, and that history records numerous instances where popular assemblies, and even whole communities, have been thrown into ecstasies of joy over such bestowals, adds strong confirmation to the proof of the universality, and infallibility, of this divine voice, within its proper province.

I am far from believing that "*vox populi*" is always "*vox dei*," but I *do* believe that if we can ascertain what has through all human history been, and now is, *vox humanitatis*, we shall not seriously err in calling *it* the voice of God. I cannot pause here to quote largely from history, however satisfactory this might be, but ask the reader to call up before his mind a few of the many illustrations, as recorded in Dean Milman's *History of Latin Christianity*, Guizot's *History of France*, or Macaulay's *History of England*. To refresh his memory, let him re-read a chapter here and there; for example, Milman's sixth of volume vii, or Macaulay's eighth of volume ii. And yet, it matters little where we open the record,

we can hardly go amiss of the most striking confirmations of our position.

If it be objected that all these histories were written by Christians, and so would naturally exalt conscience, I answer, the same sort of illustrations may be found in abundance in Hume, or Gibbon, or even Tacitus and Herodotus.

If we turn from the perusal of history and ask what prominent men, in almost every walk of life, say concerning this inner voice, which Robert Burton calls an "epitome of hell," while Chatfield names it "heaven's silent oracle," we shall find them all bearing concurrent testimony to its authority and omnipresence.

Cicero says: "A true law exists permeating all minds. This law cannot be rendered void or overruled; the senate cannot free us from it; the jurist cannot explain it away. It is the same law at Rome and at Athens, in the present and the hereafter; one law unchangeable and forever." *

Daniel Webster says: "There is no evil that we cannot either face or fly from but the consciousness of duty disregarded. A sense of duty pursues us ever. It is omnipresent, like the deity. If we take to ourselves the wings of the morning, and dwell in the uttermost parts of the sea, duty performed or duty violated is still with us for our happiness or misery. If we say the darkness shall cover us, in the darkness

* *De Republica.*

as in the light our obligations are still with us. We cannot escape their power nor fly from their presence." *

The quaint and vigorous Carlyle puts the same truth in few words in *Sartor Resartus:* "Love God; this is the everlasting yea in which all contradiction is solved, and in which whoso walks and works, it is well with him."

If from these direct testimonies we turn to those given by the great poets, we shall find them equally significant. Indeed, these gifted spirits seem to have looked, at times, with more than mortal vision upon this "mirror of our souls."

The weird and realistic Dante says:

> "I rein and curb
> The powers of nature in me, lest they run
> Where Virtue guides not; that if aught of good
> My *gentle star*, or something better, gave me,
> I envy not myself the precious boon."
>
> —*Inferno*, Canto xxvi.

Young says:

> "Already is begun the grand assize
> In thee, in all: deputed conscience scales
> The dread tribunal, and forestalls our doom;
> Forestalls, and, by forestalling, proves it sure.
> Who conscience sent, her sentence will support,
> And God above assert that God in man.
>
> —*The Consolation*, lines 228–234.

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* Works, vol. vi, p. 105.

Dryden says to the wicked king:

"Amidst your train this unseen judge will wait;
Examine how you came by all your state;
Upbraid your impious pomp, and in your ear
Will hollow, Rebel! traitor! murderer!"

We turn to Byron, a man who would hardly be supposed to have any desire to exalt the voice of God speaking within man, and find numerous passages in which the clearest possible testimony is given to the supremacy of conscience:

"Whatever creed be taught, or land be trod,
Man's conscience is the oracle of God."

"I thought to escape
By means of this accursed gold, but now
I dare not use it, show it, scarce look on it.
Methinks it wears upon its face my guilt
For motto, not the mintage of the state;
And, for the sovereign's head, my own begirt
With hissing snakes, who curl around my temples
And cry to all beholders, Lo! a villain!"

—*Werner*, Act iii, Scene 1.

We turn to Shakespeare, that prince among the analyzers of human nature, the man who has, perhaps, unveiled the heart in a manner never before equaled, except by the power of inspiration, whose writings are acknowledged to be among the foremost classics of, not only the English language, but of all languages, having been pronounced supernatural by some; and we can hardly go amiss of passages in which he plainly indicates his fullest belief in the

ever-present, though ofttimes perverted, power of conscience.

"Every man's conscience is a thousand swords
To fight against that bloody homicide."

—*Richard III.*

"What stronger breastplate than a heart untainted?
Thrice is he armed that hath his quarrel just,
And he but naked, though locked up in steel,
Whose conscience with injustice is corrupted."

—*Henry VI.*

"A peace above all earthly dignities,
A still and quiet conscience."

—*Henry VIII.*

"The worm of conscience still begnaw thy soul."

-*Richard III.*

Some of the most striking word-paintings of the power of an unstultified conscience, and alongside of it the seared conscience of one who has chosen to call evil her good, are seen in "Macbeth." The second scene in Act ii, immediately following the commission of the murder by Macbeth, to which he had been urged on against his will by Lady Macbeth, is perfectly terrific in the gleams of this soul-lightning, and the sullen thunder of oncoming doom, and I would advise my reader to pause just here and peruse it.

If we turn to the great writers of fiction, to those whose work endures, we find conscience made to speak in no unmistakable tones—cheering oppressed innocence, troubling prosperous knavery, urging on

toward righteousness, and warning all men of a judgment to come. I say that we find this element in the work which endures, and am inclined to think that no enduring work of fiction can be found which does *not* exalt the dignity and power of conscience. I have not had the time to examine this class of writings extensively enough to pronounce upon the question *ex cathedra;* but the few which I *have* read, such as *The Last Days of Pompeii*, *Hypatia*, *Les Misérables*, and some of Dickens and Scott, convince me that the *one* reason above all others why the world will not permit such works of fiction to die is because all readers see some phase of their inner consciousness mirrored therein.

Conscience is not, then, a mere ghost trumped up by *religious* teachers to awe their disciples into deeper reverence, and to frighten their adversaries into submission or flight, but is an entity which is acknowledged every-where and by all classes. In every crisis in civil affairs, in every nation under heaven, of which history gives us any account, from the lowest to the highest, conscience is seen standing out, appealed to in some form. Legislative halls and wigwam council-fires, Parliament houses and clansmen's caves, tell the same story. An appeal to conscience is the final appeal. Perverted, basely perverted often, but conscience nevertheless. Appeals to conscience have dethroned powerful sovereigns, and seated mediocrity on the throne. Appeals to

conscience have stayed the rage of red-handed violence, and have murdered the innocent children of men's own households. "If the light that is in thee be darkness, how great is that darkness!" Conscience is not a *something* or a *somewhat* which metaphysicians have created by some process of ethical evolution, and foisted upon the world, but is a some *One* existing within each and every conscious *self*.

So that not merely the *preacher* must recognize this existence, but also every other speaker and writer. No lawyer expects to move a jury while ignoring This. No politician, however base his real motives, dares disregard This. No poet can live after men call him "dead;" no character-painter can indelibly stamp his creations on the mind of ages; no historian can do more than pile up names and dates, unless he write in glad and constant recognition of this Oracle within.

If all this be true—and who will venture to deny?—have we not in this faculty, so universally recognized, a very distinct revelation of a personal God? Mark, I do not say "demonstration," any more than I have in previous chapters, for this I do not undertake, but "revelation," or manifestation. Does not the individual come face to face with that clearly-reflected Image of which we are told in the book which we call God's written word?

I have been strangely impressed while reading Principal Shairp's *Studies in Poetry and Philos-*

ophy with the following: "That which reason apprehends, and the personal will bows to, as an authority superior to themselves, cannot be a mere abstraction, but something which is congenerous with themselves. . . . The notion of God seems to be, as Coleridge has well expressed it, essential to the human mind, not derived from reasonings, but as a matter of fact actually called forth into distinct consciousness mainly by the conscience."

However unavailing my own arguments may have been upon the reader, I am quite sure he cannot miss the force of this, from so eminent and conservative a writer.

Another author, who enforces the same thought and brings out my ideal thought, that of a face-to-face view of God in the conscience, is Newman. In his *Grammar of Assent*, at page 105, he says: "If, as is the case, we feel responsibility, are ashamed, are frightened, at transgressing the voice of conscience, this implies that there is One to whom we are responsible, before whom we are ashamed, whose claims upon us we fear. . . . 'The wicked flees when no one pursueth:' then why does he flee? whence his terror? Who is it that he sees in solitude, in darkness, in the hidden chambers of his heart? If the cause of these emotions does not belong to this visible world, the object to which his perception is directed must be supernatural and divine: and thus the phenomena of conscience as a dictate avail to impress the imag-

ination with the picture of a supreme governor, a judge, holy, just, powerful, all-seeing, retributive."

No more forceful putting of this truth is possible, and while I can by no means agree with the learned doctor in all the positions taken in this remarkable book, I do find much of sturdy truth and singular aptness of illustration and inference.

I close this chapter with a painful sense of the inadequacy of language to express the deeper meanings of this fathomless subject, and with a still more painful sense of my own utter inability to properly set forth the marvelously beautiful, the unspeakably cheering, the sublimely grand characteristics of man's moral nature; and yet I close it with a humble trust that at least a few of my readers, overlooking the inadequacy of the treatment, may obtain some new views of the All-wise Father as revealed in their moral consciousness. For surely it is the privilege of every one to so look within and upward as to *see*, even though it be "through a glass, darkly," the effulgent Face. Surely it is the privilege of every one to feel the touch of this Omnipotent Hand, which lifts up all who will be lifted. Surely it is the privilege of every one to consciously expand in soul as he gets a fuller view of God, and turns his face a little more fully toward the indwelling Illuminator, even as the flowers expand when brought fully into the face of the natural sun. Surely it is possible for every one to become richer in all Christian graces, mellower of

heart and sweeter of spirit, by allowing himself to be consciously filled and consciously controlled by a pure conscience. And if even a few are led, by the reading of this chapter, to such a clearer vision, a more conscious touch, a more abounding "fullness of him that filleth all in all," I shall rest satisfied in the enjoyment of not merely a consciousness of duty done, or a *clear* conscience, but in the consciousness of the fullest attainment of the end set before me in the beginning.

"Thou madest him to have dominion over the works of thy hands; thou hast put all *things* under his feet."—*David.*

> "Life beats and wears. The spirit grows apace,
> And climbs in wonder up the heights of God
> Ensphering art and knowledge. . . .
> All his energy,
> Fresh as the blood-tides in an infant's life,
> Sweeps on, in circles strange, eternally."
> —*Hodgson.*

"Man is, in a sense, supernatural, because he works on the chain of causes and effects from without the chain."—*Bushnell.*

"It is the supernatural in man which reveals to him the God whom Nature conceals."—*Jacobi.*

"He is harnessing the forces of nature to the chariot in which shall ride the Son of man with the millennial escort."—*C. B. Fisk.*

"Art means power; it is the power of man's soul working outward."—*Longfellow.*

"Christianity feels herself equal to the task of conquering the world."—*Bishop Simpson.*

"Ideas go booming through the world louder than cannon. Thoughts are mightier than armies. Principles have achieved more victories than horsemen and chariots."—*Paxton.*

CHAPTER VI.

IN HIS ACHIEVEMENTS.

Effect implies cause. Results evidence power. Power is not self-creative. Whatever might be the decision of philosophy, common sense must always measure power by its products. And this is the scientific as well as the practical method. All genuinely scientific methods *are* practical. Nothing is more helpful to any phase of truth than to be brought to a practical test. We desire to apply this test to the Revelation of God in Man.

If all that we have said concerning man's physical structure and mental characteristics be true, historic results should abundantly declare its truth. Have man's achievements revealed a power superior to that of any other earthly being? Do they speak of endowments and capacities entirely beyond and above what we can consider earth-born, and destined to return to the earth?

One can imagine the objector already pointing his pencil, in expectation of refuting this argument because it proves too much, since the achievements of the lower animals are, in many instances, more wonderful than those of man. No man can construct a honey-comb equal to that made by the bee, or a web

like that of the spider. We freely grant this, and a multitude of similar superiorities of animal instinct over human intelligence. But our subject is MAN. We might find innumerable evidences of Infinite Wisdom in the lower animals, in plant life, and even in inorganic nature, but we prefer to "stick to the text." Revelations of God in the lower orders of being help the argument, by enhancing his glory as revealed in man.

Man is the only permanently progressive animal. He only continues to improve on all that is handed down to him from previous generations. To-day the bee constructs her storehouse just as ancestral bees builded their hives on Mount Hymettus in the days of Homer. But man no longer depends upon the straw-thatched granary. In its stead he constructs the modern grain elevator, with an almost fabulous capacity, its gigantic tongues reaching down into the ship's hold, and gathering and rapidly storing away millions of bushels, while his forefathers, with their limited facilities, would have exhausted their energies over a few hundreds. "The spider taketh hold with her hands, and is in kings' palaces." So wrote King Solomon; and the busy little creature he watched doubtless spun a web quite as delicate and dainty as the diaphanous net which was yesterday swung in the outer sunshine where the unwary flies love to hover, or the cozy shelter constructed this morning in some kitchen corner, beyond the reach of the house-

wife's broom. But man has left far behind him the primitive wigwam and the nomadic tent, and to-day rears a dwelling replete with appliances for comfort and convenience. "Solomon in all his glory" is far outdone by the average householder of modern days, into whose inner chambers are conveyed crystal waters from the rural hillside; whose home in winter glows in warmth, in summer is cooled by ices, and at midnight is made brilliant with the light of gas or electricity; who eats and drinks the products of the antipodes, and clothes himself and adorns his dwelling with the elegant fabrics of every land. Were there no other factor than that of Progression in the revelation of God in man's achievements, that alone would be convincing to the candid mind, for it indicates a divine endowment for expansion and self-culture and sovereignty nowhere else discovered. The Creator seems to have given all other creatures their entire equipment of body and mind at the outset, even at the birth of the species, while to man he gave a *divine spark*, and said, "Kindle this into a flame which shall light you through the universe." "Replenish the earth, and subdue it, and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth." Go forth, O man! and let your achievements reveal to the world the power that resides within thee.

How has man fulfilled this commission? No sin-

gle chapter could be made to give a full and complete answer. Volumes would be required.

The mind naturally turns first to man's achievements in obedience to the first part of this original commission, and what is generically included therein —"Replenish the earth, and subdue it." How unwarranted is the assumption of infidelity, that God's word is opposed to science! How uncalled-for the thrusts aimed at science in the name of religion! Here, in the very beginning, the Creator himself commissions the first man and all his descendants to become scientists. Without it the earth could not be subdued. Man's dominion is not yet complete, though rushing rivers have been harnessed to his factories, throbbing steam "confined at hard labor," and leaping lightning compelled to carry his messages. That commission enjoins that each of us shall know vastly more about nature's laws than Faraday, Agassiz, or Tyndall—more than all the philosophers and experimenters combined.

No Christian can wish to call a halt in man's achievements in the physical sciences unless he lacks the fundamental faith of the Christian religion, or has become wise above what is written; and no physical scientist can slur or stab Christianity unless he lacks the fundamental moral principles of the genuine searcher after truth, or has jumped at conclusions which his investigations have not touched. It is against these baseless conclusions

only, that objection has been made in the former chapters of this volume. The writer claims every genuinely scientific man as a fellow-worker, and welcomes results in every department with equal cordiality. All established results are additional revelations of man's divine endowment.

Medicine and Surgery.

Attention is first invited to man's achievements in Medicine and Surgery. Since these have to do with the human body, they are most intimately associated with our general subject.

The Creator, apparently, left man in utter ignorance of his own physical nature. Subject to disease and accident, he must himself discover what medicinal substances would prove remedial, and what mechanical appliances would assist repair. For centuries he made little advancement in these directions. Only a few simple substances, easily obtained from forest and field, were known to his "materia medica," and only rude and inadequate devices were used in surgery. At the beginning of authentic history medical art and science were yet in their infancy; although Homer intimates that medicine had a recognized standing among the professions, and surgery was practiced as an art.

Those old heroes of the Homeric page, with which (the page) so many students have struggled, are described as practical surgeons. Æscula-

pius, the Thessalian king, was probably a skillful physician for his day. But down to the time of Hippocrates, "the father of medicine," and on through the years to Galen, and during all the later centuries until the seventeenth of Christianity, little genuine progress was made. But after the discovery of the circulation of the blood advancement became substantial and rapid. The thousands of slow years which intervened between Homer's hero-surgeons and the celebrated Harvey contrast strangely with the quick progress made in the two centuries since that great anatomist made his discoverery.

Since the advance movement became fairly inaugurated it has constantly increased in rapidity. This has been specially manifest during the last fifty years. The modern devices for prevention of disease, saving injured or malformed members, and preserving life by operations heretofore considered utterly impracticable, rank among the greatest achievements of man. Almost every closed cavity of the body, to open which would once have been considered sure death, is now fearlessly entered by the skilled surgeon's knife, and diseased growths and malformations successfully removed. He who must soon inevitably die, unless he undergo an operation so frightful that he instinctively prefers death to the involved suffering, is, by the judicious use of benign anæsthetics, lulled to sleep, and wakes with a new lease of life, the dreaded ordeal having been passed without pain.

The recorded cases in conservative surgery read like a romance. One who has not actually witnessed some of the results can with difficulty believe the record. The joints of the arms and legs, even to the knee and hip joints, when so diseased as to produce death unless removed, are now excised, and the limbs left to heal and sometimes become as good as new. Compound fractures, which a few years ago would have necessitated amputation, are now so treated as to save the injured members. Denuded surfaces so large that they cannot heal, and hence must lead to suppuration and amputation if on the extremity, or chronic ulcers if on the trunk, are now enabled to heal completely by the transplantation of small patches of skin from other parts of the body. Instances of these excisions and transplantings are so numerous and so astonishing that the temptation is great to describe several in detail. Some have come under the writer's own observation, but let a single case suffice. A few years ago, a boy was run over by a street-car and the skin entirely stripped from the back part of his leg. Under the old *régime* amputation would have been promptly performed. But the limb was not amputated. Several patches of skin about the size of a wheat kernel were cut from the boy's arm, and grafted into the denuded surface, and the wound carefully dressed. These little patches adhered and in a few days began to grow. Each became a new center of expansion, send-

ing out delicate tissue to meet the other patches, and all together to close with the approaching borders. In due time the whole surface was covered, and the boy had as good a limb as ever.

The triumphs of preventive medicine and surgery promise to become as remarkable as those of conservative surgery. Jenner's discovery of vaccination as a preventive of small-pox has saved millions of lives and untold suffering, making the disease, which was formerly the most dreaded scourge of many populous countries, to be a very uncommon visitant at the present day. Pasteur's experiments indicate that before long similar methods may rob even hydrophobia of its terrors. Certain eminent biologists and physicians from England were recently appointed to make a searching investigation of the facts in connection with the distinguished Frenchman's experiments, and their official report indicates that success is almost certain. Dr. Freire, a celebrated physician of Brazil, has vaccinated people with yellow fever virus as a preventive of that awful disease, and the success thus far apparent is very encouraging.

These are but a few meager hints at the great practical achievements in medicine and surgery; but they indicate a degree of attainment little dreamed of a century ago, and a rapidity of progress which most astonishes those who have observed it most closely. The difficulties to be overcome are so peculiar as to seem almost insurmountable;

hence the greater significance of man's triumphs in this department.

Controlling the Elements.

Having briefly considered man's achievements in the treatment of his own body, we will next inquire what he has accomplished among the elements. And here we can hardly go amiss of truly wonderful successes. We live in an age of experimentation. Nature is being cross-questioned. Forces once too powerful for the grasp of man are now obedient to his will. In the early ages there *may* have been men who possessed some such power over the elements as we possess to-day. The "lost arts" *may* have included much of what we now enjoy. If so, it cannot but help our argument. But, so far as we have authentic information, man's control of nature was, until comparatively recent years, limited to her grosser elements. The swift-flowing rivers were used to carry his boats, and favorable winds taken advantage of to push his ships across the seas; but in ancient times he little thought that a small quantity of vaporized water could be made to drive engines, and propel larger ships with tenfold greater speed.

We have no authentic record of the use of steam until about the sixteenth century. Not until within the last hundred years has it been at all skillfully handled. What marvels have been wrought in this brief time! Long lines of sumptuous dwellings are drawn from ocean

to ocean with the speed of a storm; immense floating palaces are propelled against wind and tide from continent to continent; myriad-handed printing presses convert the earth into one great reading-room; and every-where, from mountain summit to deepest mine, are felt the pulse-beats of the modern Hercules.

Superior to all man's other triumphs over the elements stands his husbanding and control of electricity. This element would seem too subtle to be caught, and too powerful to be subdued, having been caught; and we wonder not that through so many ages of the world's history the "forked lightning" served as a symbol for what was most terrible in mythology, and the synonym of all that was mysterious in power. Resentful Nature struck down her bold investigators when they endeavored to bridle this mysterious agent; the instruments constructed to assist in its capture she demolished in the using; and seemed to say with threatening and reiterated emphasis, "Hands off." But Nature's sovereign could not brook defeat; and ultimately this supposed foe to man, this reckless monster among the elements, was tamed and taught to speak. Encouraged by this success, the work was pushed with still greater vigor, and rich indeed have been the rewards.

It is not my province to here describe apparatus or give the details of experiments, however fascinating they may appear, but simply to call attention to results. But I cannot refrain from giving a few

biographic facts which furnish a most gratifying manifestation of that divine element in man which enables him to triumph over obstacles. The man to whom the world must ever remain indebted for the electric telegraph was for years beset by the most crushing difficulties and disappointments. The following published letter, written in 1841, from his hired room in New York, where he lived alone and friendless, tells its own story:

"I find myself without sympathy or help from any associated with me. For nearly two years I have lived on a mere pittance, and denied myself even necessary food, that I might have money enough to put my telegraph into such a position before Congress as to insure its success. I am crushed for want of means. No one knows the days and months of anxiety and labor I have had in perfecting my telegraphic apparatus. For want of means I have been compelled to labor for weeks, making with my own hands what could have been made much better in a tenth part of the time by a good mechanician. Nothing but the consciousness that I have an invention which is to mark an era in human civilization, and which is to contribute happiness to millions, would have sustained me through my trials in perfecting my invention. In order to save time on my instrument, I have lived in my studio, preparing my own food, which I carry from the grocery in small quantities in the evening. Samuel Morse."

Amid all these discouragements he persevered, and finally, just a few minutes before the close of a protracted session of the Senate, one winter night in 1843, a bill was passed granting aid to build an experimental line from Baltimore to Washington. The *world* soon knew the poor inventor then. But his success did not puff him up. The first message, bearing date of May 24, 1844, and still preserved in the archives of the Connecticut Historical Society, is, "What hath God wrought!"

Every year added some new element to this original triumph. There is no occasion for pausing to give the details of how dwellers upon Atlantic's slope became next-door neighbors to those on the Pacific coast; and how, ultimately, people of different nations chatted together each morning over the same events as familiarly as over some neighborhood occurrence. But, as seekers after the revelation of God in man, we record with grateful hearts that *this* man, who lived for nearly twenty-eight years after that first message was sent, and received the highest possible honors from all sources, retained to the last the same humble trust in God which sustained him in his dark and trying years; so that when a statue had been erected to his memory in Central Park, New York, and at its unveiling, in the summer of 1871, representatives from this and other lands were vying with one another in speaking his praises, he counted it his crowning honor to acknowledge Christ. Taking his place at

an instrument which had been connected with all the principal wires in this and foreign countries, he sent as a final message, "Greeting and thanks to the telegraph fraternity throughout the world. Glory to God in the highest; on earth peace, good-will toward men.—S. F. B. Morse."

But great as were the achievements of these years in the husbanding and use of magnetism and electricity, those of more recent years far surpass them all. Late advances in telegraphy alone have increased its efficiency fourfold. Added to this we have the electric light converting night into day, and the various electro-motors noiselessly, yet efficiently, driving printing presses, running elevators, and even whirling street-cars along as if by magic; besides many other less conspicuous, though no less valuable, operations of these all-pervading agents.

In all these so-called practical victories of mind over the elements we take no note of the remarkable results to be seen in the various scientific instruments that have been constructed, without which many of the advances in other departments would have been impossible.

We would pluck no leaf from the laurel-wreath of fame which so rightfully adorns the brow of Edison, and others of the world's great living inventors, but we would crown with equal honor those earlier investigators whose achievements made theirs possible. No student can fully comprehend the magnitude of these

later triumphs until he studies carefully the laborious processes through which men like Sir Humphry Davy, Faraday, and others passed in establishing fundamentals. The more carefully he studies them the more profoundly will he become impressed with the magnitude of man's achievements.

Living in this year of grace 1888, when distance has been almost annihilated and time multiplied ten thousand-fold through time-saving instruments for conveying thought, we can with difficulty imagine our condition without them. Hence few men of the present day stop to consider what their older brothers have accomplished.

THE MECHANIC ARTS AND CIVIL ENGINEERING.

Equally significant, though perhaps not as startling, are man's triumphs in the domain of what may be termed the mechanic arts. That "knowledge is power" has long been accepted as a fact, but nowhere does this appear so *literally* true as in the exhibitions of superhuman power furnished by the various appliances that human ingenuity has devised. Even the ancients must have possessed much knowledge in order to have accomplished the feats of lifting and transportation which were necessary in rearing certain structures that still remain as monuments of forgotten inventions. But when we consider the present achievements of mechanical and engineering skill we are absolutely lost in the contemplation of the marvelous

works which have been wrought. Not content with bridging ordinary rivers, man conceived the plan of swinging an iron highway across Niagara's gorge, and in due time it was done; and long trains, bearing their living freight, pass to and fro over the dizzy depths. Then other and grander structures of a different sort, but for the same purpose, were conceived in other fertile brains, and brought forth to span the "Father of Waters," and the East River at New York. Who that has stood near this mighty mass of iron and steel, and watched the thronging multitudes pass to and fro, and reflected upon the fact that the whole structure must have existed in the mind of one man before the first stone was laid, or the first wire constructed, has not mentally exclaimed, What is too great for mortal minds to attempt! And when one takes into consideration the fact that all those materials were once in the rough, most of them buried in the earth, and lets thought dwell upon the varied machinery necessary to bring them out of their native forms into the present state, his mind almost grows weary in the contemplation.

He gazes upon the flames leaping heavenward from lofty furnace chimneys, watches the streams of molten iron as they flow like rivers from these fiery sources, sees the crude iron pass through the process of becoming purified and hardened into steel by means of one of the most useful triumphs of man's genius, listens to the thud of forge hammers striking

blows equal to those of a million human arms, beholds the stubborn iron molded at man's will, and the hardest steel sawn, chiseled, and carved like wood, and reflects that all this is performed by machinery which is the product of the human brain; and he says within himself, Surely here is dominion, here is power!

Again, not content with tunneling mountains to make a shorter route for his railway trains, and cutting artificial rivers to float his products to the seaboard, he sets to work to make new paths even for the sea, and presently his ocean vessels go steaming through the Suez Canal, and the fortunes of nations are materially changed by the changed system of intercommunication. The true dignity of such a work cannot be appreciated without a careful survey of the obstacles to be overcome, and a thorough study of the massive machinery brought into requisition.

And yet these achievements in engineering and manufacture are no greater, intrinsically, than those which pertain to the less ponderous affairs of life.

All the way from the poising of a sewing-machine needle to the forging of a propeller shaft, from the making of an electric pen to the construction of the modern printing-press, from the pointing of a pin to the setting of a Corliss engine, are seen the distinctive marks of man's imperial genius, of that power over nature which distin-

guishes him from all other mortal existences, and reveals the divine image within.

Astronomy.

Man's triumph over natural obstacles, his control of the elements, his achievements pertaining to the earth, are wonderful; but those pertaining to the myriads of worlds about us are vastly more so. Unsatisfied with "subduing the earth," with bringing into captivity the forces of this planet; not content with "replenishing the earth," with devising such implements of agriculture, and making such discoveries in chemistry, as to increase her productiveness *more* than "thirty," or "sixty," or even "a hundred fold," he has been constantly reaching out into wider fields. It is in the department of astronomical research that the sublimity of the human mind most fully appears. Looking intently upward he seems to catch new inspiration, and his mind more clearly reflects the divine mind.

From the earliest ages the study of the heavens has offered rare inducements for exalted thought and patient investigation, and some of the foremost scholars of every period of the world's history have engaged therein. For many years results were unsatisfactory, and the best astronomical conclusions incorrect and often quite grotesque; yet any person who will read the records of even those earlier years cannot fail to see the majesty of minds groping

their way, unaided, through the mysterious fields of infinite space. No history, not even that of the "last decade" in science, can be more stimulating and refreshing than this; for, as Dr. Robert S. Ball says, the story "leads to the contemplation of the mightiest efforts of nature and the greatest achievements of human genius." *

But during the last century, and especially in very recent years, advancement in this department has been so rapid that the general student finds serious difficulty in keeping abreast of the latest discoveries. As one reads such volumes as those of Newcomb, Clerke, and Proctor, and the various articles in the *Reviews*, he finds himself querying as to what Galileo, or even Sir John Herschel, would have thought could they have had the spectroscope, the tasimeter, and the instantaneous photographic process suddenly revealed to them. And even yet we seem to be only on the threshold of this palace of scientific marvels. Well may Miss Clerke say, in closing an extensive history of the progress of this science during the nineteenth century, which tells of knowledge already obtained that seems almost fabulous: "And our knowledge will appear the merest ignorance to those who come after us. Yet it is not to be despised, since by it we reach up groping fingers to touch the hem of the garment of the Most High.† "

* *The Story of the Heavens*, p. 500.

† *History of Astronomy During the 19th Century*, p. 452.

It was not a small triumph when, the measuring-rod of mathematics having been reached out into space, the distance of the sun from us and from our sister planets was ascertained. Kepler's Laws, those comprehensive generalizations which now seem so simple, were no ordinary achievement for the early part of the seventeenth century, while Newton's law of universal gravitation and his *Principia* were sufficient to give lasting glory to the later years of the same century.

To measure the velocity of light was a performance of unmeasured importance, and a careful study of the achievements of La Grange and La Place in the eighteenth century cannot fail to impress any mind with the transcendent powers of the human intellect when once fully aroused to grapple with great problems. But recent years have added new luster to all past triumphs by revealing other and yet grander truths.

Not enough for the all-comprehending mind of man to measure celestial distances and predict eclipses to a minute, centuries in advance; to describe the orbits of blazing comets, and weigh the sun and the entire solar system in a balance; to construct telescopes enabling him to gaze upon myriads of worlds never seen by the naked eye, and tell the distance of stars whose light, traveling at a velocity of 186,300 miles per second, has required thousands of years to reach the earth; to map out the heavens like a book,

and classify and give names to myriads of worlds—not enough to do all this, and much else that was accomplished before the last two decades. Still grander victories must be won.

Since the invention of the spectroscope we are not content to study merely the movements and external aspect of sun and planets, but we ask to know their *substance*. What is the sun made of? Has he upon his surface materials similar to those upon the earth? What sort of an atmosphere, if any, envelopes that fiery orb? What sort of fuel feeds these fires which the telescope reveals, leaping up from his surface? These and a multitude of other questions have been for years seeking answer, with no apparent prospect of finding it. But now the spectroscope has already answered some of them, and gives good promise for the remainder.

My limited space will not permit me to enter upon a description of spectrum analysis, nor does the province of this book call for it; and yet I hope that every reader who does not fully understand its methods will obtain some one of the many excellent volumes treating specially upon this subject, and give it a thorough reading.

In answer to the question, What is the sun made of? the spectroscope says, Of substantially the same materials, chemically speaking, as the earth: iron, nickel, sodium, magnesium, etc. As regards its atmosphere, the same witness says, first of all, that such an atmosphere actually exists, and then informs

us that it is made up of the same constituents, and is very similar to what would be the atmosphere of our earth were her temperature raised to that of the sun; and, moreover, that that atmosphere has its currents, its tornadoes, its cyclones, its storms of every sort, the same as the earth's atmosphere, only much more violent.

Concerning the fires which are seen leaping up from his surface, this marvelous register of flaming substances millions of miles away says they are immense volumes of hydrogen gas thrown out by terrific explosions on the surface, or bursting forth from some immense volcanic crater.

And so on, for numerous other questions, we receive replies that are always at least plausible.

Marvelous indeed are the discoveries of modern chemistry as applied to the substances found upon the earth, substances which we can take in our hands, and subject to analysis in our laboratories, and, by so doing, extort their secrets from them. Truly wonderful is the skill which can detect the millionth part of a grain of arsenic in solution, and by analysis of bodily secretions determine the exact condition of the internal organs; and before the revelations of chemistry in this department alone we cannot do otherwise than stand in grateful astonishment; but how much more profound the amazement when we contemplate the same methods extended to substances ninety millions of miles away!

I have arisen from the reading of J. Norman Lockyer's *Chemistry of the Sun*, published in London, 1887, with such a sense of the grandeur of man's achievements, and the sublimity of the human mind in action, that it seems utterly incomprehensible how such achievements can be contemplated by any man, and his whole intellect not be convinced of supernatural creation, and his whole soul not go out in adoration of a supernatural Creator.

Nor is this all. For twenty years the spectroscope has been answering difficult questions, and adding wondrously to man's store of knowledge, each year's record showing an increase over the last; but only yesterday man's fertile genius placed in the astronomer's hands a new instrument of marvelous power, with which to bring out of the very remotest arcana of space secrets hitherto unrevealed. It is a simple sensitive plate of glass—the photographer's "instantaneous plate"—yet what a field does it unfold to our view! Even on the earth this "instantaneous process" works wonders. The eye of the camera is turned upon a busy street, the "cap" is lifted for an instant, and the whole scene is *fixed*, and can be preserved and duplicated at pleasure — men and women walking, children frolicking, horses trotting, every moving thing pictured, true to the life, in the exact position occupied the instant that sensitive plate was exposed. Multitudes of anxious faces gazing up at some imperiled fireman, or other multitudes enthu-

siastically cheering a noble act, are by this process "caught," in every lineament of feature and motion of limb, with lightning-like rapidity; even the lightning flash itself has repeatedly been photographed hereby. Moreover, this sensitive plate will discern the exact features of faces and objects at a distance far greater than the eye can possibly reach; so that where a person looking out upon a crowd would see only the *outlines* of faces, when looking upon the picture, obtained in the hundredth part of a second, he can clearly discern individual features.

How does this apply to astronomy? Photographing the heavens is a very essential part of the astronomer's work. This was formerly a most laborious process. Special telescopes, and special machinery to keep them moving with exactly the same velocity and direction as the apparent motion of the heavens, were necessary. Even then but slow progress could be made, for this ponderous machinery and its telescope must be directed to a single spot for a long time in order to obtain even an inferior picture. Now all is changed.

With almost the rapidity of thought, any section of the heavens can be photographed. Furthermore, by the surprising power of this sensitive plate to reach beyond the limits of human vision, when we allow it the use of a telescope it reaches proportionately far beyond telescopic vision, and brings before the naked eye an exact photograph of objects too distant to have ever before been discovered. By this means

several nebulæ and stars hitherto unknown have been clearly made out. Recently a nebulous spot near the star Maja in the Pleiades was thus discovered. It proved of absorbing interest, and has been several times photographed, establishing its existence beyond all controversy.

It would seem, indeed, that no higher achievement of the human mind could be possible than that of placing in our hand a photograph of a world so far away that the light which made the impression upon the sensitive plate must needs have started from that distant orb thousands of years before man ever trod this earth?

But more than even this is now being accomplished. Spectroscope and sensitive plate have combined their powers, and spectra of those distant suns we call stars are being photographed and placed on file for comparative examination. Thus it becomes possible to study the heavens comprehensively instead of merely piecemeal.

A recent *Astronomical Review*, October, 1887, informs us that already the spectra of 8,313 stars of the sixth magnitude, or brighter, have been measured and catalogued. How all-comprehending does this poor human intellect seem to become as we contemplate its achievements in such a sphere as this! Astronomy of the solar system, of our sun and his retinue, of our moon and her phases, of tides and seasons, of eclipses and permutations? Yes, this alone were

indeed valuable! Astronomy of the starry heavens —of constellations and nebulæ, of other solar systems and double suns? Yes, all this by telescopic aid alone! Astronomy of the sun's elements, constitu-ents of the planets, nature of solar tornadoes and inter-planetal cyclones? Yes, all these by the added assistance of spectrum analysis! But now we look upon the invisible, we behold the unseen universe, we have an astronomy of the unknown regions beyond, and it doth not yet appear to what lengths this latest triumph of human genius will carry us. When we consider these sublime victories already achieved, and the prophecies of sublimer triumphs contained herein, we marvel not that the Psalmist, imbued with an exalted sense of man's super-material worth, exclaimed, "When I consider thy heavens, the work of thy fingers, the moon and the stars, which thou hast ordained; what is man, that thou art mindful of him? or the son of man, that thou visitest him?"

Geology.

Achievements equally worthy, if not as inspiring or sublime, have been won in the world beneath our feet. While telescopes have been pointing heavenward, and mathematicians have been weighing the worlds and essaying to measure infinite space, students with pick-ax and hammer have been turning up and breaking in pieces the flinty rocks, and the

plummet of man's insatiable spirit has been falling deeper and deeper into the secrets of an apparently measureless past.

While astronomers have been reading the records of sun and stars, written upon spectroscopic screen and photographic plate, geologists have been reading the records of earth's genesis and progress, written, not upon a sensitive plate of glass, but upon the adamant—written with a pen which moved too slowly to make mistakes, and preserved under an unbroken seal through all intervening ages.

Who can adequately understand the triumphs of mind which have made possible such volumes as those of Dana, and of a score of other masters of geology? What though there have been errors and false hypotheses! What though there may still exist, as there doubtless do, great mistakes which will need to be corrected! These detract not from the worth of the genuine results achieved. Too prone are we to think lightly, or at least superficially, of the immeasurable difficulties which have been overcome in giving to all students an open map of the great world-progress from the oldest strata up to the latest-finished carpet for man's dwelling-place. Nothing but actual experience in field and mine, in cave and gorge, can bring one to an appreciation of the perplexing problems presented by tilted and broken strata, by displaced and widely transposed fossils, and ten thousand other disturbances which have taken place. The extent to

which these have been mastered is the clearest possible indication of the unconquerableness of man's spirit of inquiry. But so much attention has already been given in these pages to the teachings of geology that nothing further need be offered here.

Geography and Discovery.

Another department which speaks eloquently of human progress is that of geography and exploration. Man's domain was originally a narrow one. His knowledge extended not beyond the circumscribed limits of one small province; but through six thousand years he has been enlarging his field of observation.

The discovery of a continent may not seem a very great achievement to the present generation, with our modern vessels and present knowledge of navigation; but contemplate the same before the days of steamships and the mariner's compass, and it rises to a sublime endeavor, and, when accomplished, deserves to be recorded as one of the very foremost. Man's recent triumphs in this direction, although Livingstone and Stanley have made their names immortal hereby, are not as remarkable in the line of great discoveries as in an accurate and intelligent mapping out and description of both old and new regions. By means of these the average school-boy may have a more comprehensive knowledge of the various countries of the earth than could be gained from many years of travel unaided by maps.

If to this we add his achievements in the department of physical geography, the view is greatly expanded. Not merely the one fourth of the earth's surface which is above water has been explored, but the three fourths which are under water, involving some of the most difficult undertakings ever essayed by man. Oceanic mountains, deep sea plains, and mighty ocean rivers, all have come under man's survey.

"The wind bloweth where it listeth," it is true, and yet, while mystery still remains concerning our atmosphere and its movements, much is known and more is constantly becoming known.

Joining hands with every branch of material science, physical geography grapples with all problems pertaining to the composition, varying density, temperature, and moisture of the atmosphere; considers the marvelous power which carries about over the earth millions upon millions of tons of water, drank up in invisible vapor from sea and land, distributing it in rainfall here and now and in snow-storms at some other time and place; unravels the intricate maze of the prevailing currents, and in some measure accounts for the ever-varying climatic conditions; and even places prophetic watchmen upon the high towers of earth, who, having seized upon elements from earth and atmosphere, signal to their fellows, thousands of miles in advance, the approach of storm or calm, of intense heat or bitter cold.

In a word, man's achievements in this department not only bring before us the *surface* of our globe in detail, but throw upon the canvas, for our study, a complete outline of this old world in action; all the mighty cosmic forces working and interworking in earth, and sea, and atmosphere, in belching volcano and rumbling earthquake, in gulf streams and polar currents, in gentle sea-breezes and terrific cyclones—a living, luminous, earth-embracing organism, comprehending all lesser material organisms.

Botany and Zoology.

As he pushes on with his achievements, he is not content with these *general* results of discovery and physical geography; he desires to have an intimate acquaintance with all plant and animal life. Hence he has built up the present accurate and comprehensive sciences of botany and zoology, with their kindred branches.

We are told that "Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field." In more recent years this naming has been carried to such an extent that, not merely to these conspicuous factors in the whole of animal life have names been given, but even to the smaller, the insignificant creatures, down to the very insects too minute to be seen by the unaided eye. Moreover, all these have been classified. This has been so well done that any specimen of animal life yet discovered, from the

elephant to the invisible animalcule which lives and thrives in *pure* (?) water, is readily assigned to its appropriate species and its characteristics clearly defined. When we consider the thousands of different species, and the tens of thousands of different families, some conception of the magnitude of this achievement is obtained.

It is recorded as a mark of the exceeding great wisdom of Solomon, that he "spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall." In this line of study the wise man has had many noble successors. As should always be the case, these have made good use of past knowledge, and advanced greatly upon past attainments. Not only from the mightiest growth, symbolized very fitly by the Lebanon cedar, down to the humblest hyssop, but even to the poor little lichen which cannot be seen without a microscope, has all plant-life been given a name; and not merely given a name, but an examination of plant-growth and all plant elements has been instituted, the anatomical structure carefully made out, and the physiological functions systematically analyzed.

Such pioneers as Cæsalpinus and Ray, such progressive geniuses as De Candolle and Linnæus, and such masters as Humboldt and Gray, counted it enough of distinction to be known as botanists. And well they might; for, although in some minds there may exist the impression that botany is merely a

sort of school-girl pastime among grasses and flowers, nevertheless it is one of the most comprehensive and wide-reaching departments of study known to natural science, and, withal, one of the most useful. A person needs only to spend a few days among some one of the great collections of natural history to become convinced of this.

It has been the writer's privilege, in connection with his work upon this volume, to visit the Botanical and Zoological Gardens in San Francisco, and the Smithsonian Institution at Washington, and the inspiration of those days of observation and study has not yet departed. There is, in these two places alone, enough to astonish and bewilder any unskilled observer, unless he has the assistance of a well-informed guide and takes an abundance of time. And these are only two of the *many* natural history monuments to man's power.

History and Language.

Leaving, now, these somewhat material achievements, although but very inadequately noticed, the great triumphs in physics having been scarcely touched upon, I invite attention to the written and printed monuments commemorative of the men and events of years gone by. Ever since the dawn of civilization men have been accustomed to make some record of their actions. For many centuries these records were extremely meager, and, with few excep-

tions, very crude. Still they were *history*. As civilization advanced better facilities were had, and they were constantly enlarged and improved. Finally, with the invention of the printing-press, there was no longer any occasion for incompleteness, and every event of any consequence found recognition on the printed page.

Consider for one moment what an almost infinite mass of information this comprehends. Consider how, during the last hundred years, many ancient lands have been ransacked from sea-coast or river-front to mountain-top and farthest inland town; nay, even the long-buried cities being unburied, and the time sealed tombs unsealed, in the eager quest for historic facts. Consider the great expeditions which have been fitted out, under the patronage and protection of the wealthiest, most powerful nations, for the simple purpose of interrogating the past. Consider with what almost superhuman mastery of learning numerous ancient dialects have been "picked out" from a few words on a broken slab here, and a few sentences on an unearthed pillar there, until they have been assigned a place among the great families of human speech, and been traced back to a common origin. Consider the consummate genius which has discovered a key to, or perhaps we should say the unparalleled perseverance which has wrought out a solution of, the ancient hieroglyphics, and given us, as voices from the dead, a story of what formerly seemed a history forever sealed.

Consider all these, and when, by these considerations, you have arrived at some feeble conception of the all-comprehending grasp of human achievements in this realm of the past, just make a week's visit to the Von Ranke library, or some other great storehouse of history, and have this feeble conception mightily strengthened. Spend the whole week in the midst of those marvels of historic wealth, simply reading title-pages and taking an occasional glance within, as something specially significant meets your eye, and there will remain no further occasion for words from my pen to impress you with the genuine grandeur of man's achievements in philological and historical research.

The Fine Arts.

But the divinity within man could not be limited to even spoken language for conveying thought, or to the printed page for recording his triumphs. He would throw upon the canvas a whole volume of living, glowing thought, which should speak through the eye to the soul of man in burning words of resplendent beauty. He would epitomize the events of the most important eras in history, or sum up the most world-encompassing prophecies, and on some cathedral window, public hall, or chapel ceiling lay them, as a whole, upon the mind and heart of all beholders. Results may be seen in the paintings by Orcagna, in the Campo Santo at Pisa; the Four Greater Prophets, by Signol, in the Church of St. Sulpice in Paris;

"The Epitome of the History of Civilization," by Cornelius, in the colonnade of the Museum of Berlin; the series of biblical paintings in the windows of the Cathedral of Milan, and in many other places.

He would breathe the spirit of his grandest inspirations into the pulseless marble, until every line should become a voice, every curve a soul-filled feature, and the whole an embodiment of all that is beautiful in art, sublime in spirit, and immortal in human destiny.

He would gather up all forms of utility and beauty, of permanence and grace, of sublimity and modesty, and, combining them in one grand whole, would erect them into some house of worship, civic edifice, or private dwelling, as a significant embodiment of mind in matter, of art in architecture.

To what extent these desires of the human mind have been realized, how fully these conceptions have become actual achievements, may be readily inferred by almost any general student, but can be fully comprehended by only the favored few who, with senses all alert, have been permitted to travel among the Old World treasures of art, and have their souls enkindled at the ancient altars.

Enough can, however, be learned by all of us from copies and descriptions of the old masters, and from what is being accomplished in our own land at the present time, to convince us of the grandeur of man's achievements in these and other lines which minister

to the soul through the eye. The *worthiest* advancement of recent years has been in the direction of bringing the treasures of art within the reach of men of modest means. The most *surprising* triumphs have been won in the art of rapid production. Events of the most stirring interest which took place but yesterday are depicted, true to the life, and to-day scattered like the leaves of the forest. (What though the ability to do this is seized upon for purposes of evil; this does not lessen its intrinsic dignity.) Surprising as it may seem, future historians will not be content to merely describe in *words* the great civic or military events of the world, but, by the instantaneous process in photography, every phase and feature of man's assembled activity will doubtless be shown as a whole.

Furthermore, man cannot be limited to even these modes of conveying thought. Catching echoes from the universal harmonies of sound in nature about him, his soul begins to well forth in song. Conceptions too lofty for ordinary speech find voice in oratorios which seem to re-echo the oratorios of the skies. Thoughts too spiritual for common words take to themselves the wings of melody, and go floating away toward the skies, carrying the soul upward, almost within the gates of everlasting song. To assist him in giving expression to these exalted emotions, he calls in the aid of his inventive genius, and lo! organ pipe, and viol string, sweet-toned flute

and piano wire take up the soul-born harmonies, and help to waft them on.

Few departments of human effort deserve to rank higher than this, or serve to reveal man's heaven-born qualities more clearly.

If we ask for utility, it is here. Into what phase of human experience does it not enter? Where has it not proved a solace in sorrow, an inspiration in discouragement, an invigorator in weakness? How has it ennobled the character of individuals and of nations!

If we ask for beauty, it is here. What more fully answers to every criterion of "the beautiful" than the fundamental harmonies? What ministers more perfectly to the æsthetic nature than the exquisite blendings of philosophy and sentiment in the symphonies of Haydn and Beethoven? How have the coarsest natures been subdued and harmonized by its gentle ministries!

If we ask for power, it is here. What more potent than the rallying song of a nation rung out by patriot voices, and re-enforced by martial music? What added legions in the Marsellaise hymn! What "reserves" in the Battle Hymn of the Republic!

And all this is but the most meager hint of man's achievements in this field. The cheering advances of recent years lead to the conclusion that music is only in its infancy; yet, so extensive has its domain become, and so far-reaching are the generalizations of pure mathematics which have been applied thereto,

that to be a master of music at the present day means scholarship of a very superior order.

Poetry.

Kindred to music and painting is poetry. The genius which in one soul sees the imperishable factors of some world-crisis and sets the deft fingers to throwing it upon the canvas, in a kindred soul, seeing the same imperishable factors, sets the swift-winged pen to writing them out in Homeric grandeur or Shakespearean drama. The same divine afflatus which out of one soul breathes upon the cold marble, making it live and speak in mute though eloquent language, from another soul breathes forth Miltonic imagery or lyric verse.

The world's great poets have spoken a varied language; as varied as the world's great thoughts. In these diverse forms these great thoughts, born to live forever, have been enshrined. By common consent the poet is crowned king among authors. To him is accorded a higher order of talent than to the writer of prose. I am speaking now of *poetry*, of that living, glowing, soul-quickening speech which every-where bears the stamp of royal birth; *not* of the pulseless, machine-made *rhymes*, destitute of both sense and soul, which are sometimes labeled "poems."

So universal is this lofty estimate that no honor is more highly prized by any nation than that of having been the birthplace of some great poet. Greece, the

cradle-land of oratory and art, the mother of warriors and statesmen, points with commendable pride to her illustrious sons in all these spheres of activity, but chiefly does she glory in the fame of her blind old bard, whose name is a household word wherever literature sheds her beneficent rays.

Roman history records many brilliant achievements in field and forum, but no page is quite as luminous as that which bears the name of a Virgil or a Horace. Such creations of men's mind live, though nations perish and even languages die.

The Parthenon may become a heap of ruins, but the *Iliad* never shows signs of decay. The proudest monuments and palaces of the Eternal City may crumble into dust, and all the glory of military achievements fade away, but the *Æneid* grows fresher as the centuries are numbered, and goes on stimulating the thought of new millions of students. Verily, even one such creation were sufficient to declare mind immortal. Immortality cannot have been earth-born. And, although there has been only one Homer, there have been many Homeric minds; while we have but one *Æneid*, we have many imperishable monuments to human greatness constructed of the same material. So vast are the stores of wealth which have been produced by poetic minds and treasured up in poetic form, that one finds great difficulty in choosing illustrations. For all genuine poets are one in the deeper characteristics of their natures.

As Watts says: "The moment the poetic mood is upon a man all the trappings of the world with which for years he may perhaps have been clothing his soul, the world's knowingness, its cynicism, its self-seeking, its ambition, fall away, and the man becomes an inspired child again, with ears attuned to nothing but the whispers of those spirits from the Golden Age, who, according to Hesiod, haunt and bless the degenerate earth."

Nor is this overdrawn. No genuine poetry is possible until the whole soul is *fused*, is raised to a glowing heat which actually incorporates the subject with itself; until the man becomes oblivious to self, for the time, in the pure vision of some great theme.

As one of them has said:

> "I started once, or seemed to start, in pain,
> Resolved on noble things, and strove to speak,
> As when a great thought strikes along the brain,
> And flushes all the cheek."

The reader's attention will be invited merely to a *few* of these genuine poets; for a few examples will serve the purpose of the argument as well as many. Foremost among all we would place the poetry of the Bible, were it not for the fact that opponents might object that the achievements of men directly inspired of God were being instanced as proofs of man's own power; for while the psalms of David, the wails of Job, and the visions of Isaiah may not possess all the elements of formal accuracy, they *do* pos-

sess all the elements of *poetry* in its sublimest aspects. Next to these stand the creations of William Shakespeare. Many volumes have been written describing and endeavoring to analyze them, and yet their perennial fountains are ever revealing some new meaning. Here, in these productions of a single mind, we have history, biography, philosophy, and morals epitomized and focused in such a manner that human character in action stands revealed to our gaze as nowhere else, save in the volume of God's own composing.

The plummet of his genius seems to have gone down into the nethermost regions of human consciousness. The vision of his great soul seems to have penetrated the secrets of all other souls. He reveals men to themselves in their darkest, most soul-destroying aspects, and in their brightest, most soul-enriching experiences. He sets furies black from hades dancing about the hell of an outraged conscience, and angels fresh from paradise flitting through the heaven of a pure and noble character. He paints with inkiest hue the loathsome, leprous countenance of domestic infidelity, and with most beauteous tints the shining face of filial love and home's blest harmonies. He shows how nations prosper when the manly man bears rule, and how the mightiest armies are powerless when treachery and love of self are on the throne.

This William Shakespeare was only a man! Who will say that his achievements do not reveal a supernatural Creator?

Milton is another of these commanding geniuses who have become the world's benefactors. His errors in science or theology do not detract from the intrinsic worth of his "Paradise Lost" as a triumph of the human intellect.

Byron, notwithstanding his laxity of morals, has left the plainest possible evidences of the mind's exalted dignity in "Childe Harold" and "The Prisoner of Chillon," as may be seen in the following:

> "Eternal spirit of the chainless mind!
> Brightest in dungeons, Liberty! thou art,
> For there thy habitation is the heart—
> The heart which love of thee alone can bind."

Longfellow and Bryant are names which every American treasures with even a sacred reverence, because of the inherent nobleness and worth of their writings.

But I must refrain from further illustrations, except to ask the reader, by way of gaining some conception of the extent and value of human effort in this department, to contemplate the magnitude of the loss which would be involved in the destruction of all our treasures of poetry. Then, consider the conditions had there never been a Shakespeare or a Milton, a Cowper or a Longfellow; had Mrs. Browning never sung, or Jean Ingelow never breathed forth her soul-inspiring stanzas; had Wesley's muse been silent and Newton's hymns remained unwritten; had Whittier never sent forth his "Voices of Freedom,"

and all the other divinely inspired souls of measured speech uttered themselves only in prose. Considering the measureless void which would have existed had such been our lot, perhaps, even with this very cursory glance at poetry and poets, some adequate conception may be formed of the really exalted and revelatory character of man's achievements as therein exhibited.

MENTAL AND MORAL SCIENCE.

One other department of human effort must be briefly examined.

Consider the systems of mental and moral science which have been elaborated by men. Even atheistic philosophy itself, while endeavoring to read God out of the universe, has, by its shrewdness in the putting of a poor case, exhibited with greater clearness the original presence and power of God in the creation of the reasoner's mind. Any thing approaching to a complete survey of man's achievements which might be included under the term mental philosophy would require several ordinary volumes instead of a few pages. A large share of the world's best thought has been devoted to an analysis of thought. The most vigorous minds of every age have turned inward, and studied the mind itself. As Cousin says, "Turn your attention to history, that living image of thought: every-where you perceive religions and philosophies."*

* *History of Philosophy*, vol. i, p. 302.

Amid problems so vast and full of difficulties errors in fundamental conceptions and untenable conclusions are but natural; but, while they detract from the utility and satisfactoriness of our accomplishments, they do not invalidate their claims to a place of rare distinction. We are quite too ready to depreciate the work done by the ancient philosophers and mediæval scholastics because of such errors. Pioneers in mental philosophy should not be held to severer tests than pioneers in physical science.

When we study the writings of Plato and Aristotle, and remember the circumstances of the time, we cannot but rank them with man's noblest achievements. Plato's conception of what philosophy was, "the desire of the knowledge of eternal existences," and Aristotle's terse definition, "the knowledge of truth," show their fundamental perceptions of the great domain they were entering. Clement says that "Plato touched the very gates of truth." Coleridge declares that he was "a plank from the wreck of Paradise cast upon the shores of idolatrous Greece." And although these expressions may seem to many rather overdrawn, I am quite sure that they will not so appear to those who have read the *Phædo* and the *Republic*. Nor were theirs the earliest achievements in philosophy. The contributions of Socrates alone, to say nothing of Xenophanes, Zeno, Anaxagoras, and others who preceded him, were sufficient to mark an era in human history.

Aristotle tells us there are two things of which Socrates must justly be regarded as the author—"the inductive reasoning and abstract definition."* No man has a better right to speak concerning this than his illustrious follower. But if he is not the father of the inductive method his immediate pupil is, for Bacon himself says, after discoursing upon the requirements of this method, "Up to this time this has not been done, nor even attempted, except by Plato alone, who, in order to attain his definitions and ideas, has used to a certain extent the method of induction."†

Full of interest would be an examination of the achievements of the long line of ancient philosophers in Greece and other nations, but the great works of even the modern philosophers are too numerous to permit more than the bare mention of a few. Towering like mountain peaks above the general range we see Bacon's *Instauratio Magna*, Descartes' *Principia Philosophiæ*, Spinoza's *Ethics*, Locke's *Essay on the Human Understanding*, and Leibnitz's *Théodicée*, any one of which is sufficient to make an age or nation illustrious, and certify man's "patent of nobility."

I am, of course, neither indorsing nor condemning these systems just now, but simply calling attention to them as exhibitions of the triumphs of thought. Among the productions of more recent times we

* Aristotle's *Metaphysics*, vol. xii, p. 359.

† *Novum Organum*, vol. i, p. 105.

turn with profound admiration to the works of Clarke, Kant, Fichte, Reid, Stewart, Hegel, Schelling, Brown, Hamilton, Ulrici, Calderwood, Lotze, and others, and especially to the immortal works of certain Americans which a fear of unjust discrimination restrains me from naming.

The writings of Ulrici and Lotze, in particular, have profoundly impressed me with their marvelous fullness, and, in some passages, with their almost inspired skill in unfolding what seem to be fundamental truths.

An exposition of their systems is not possible here, but the reader can catch a glimpse thereof from their own words in regard to the *purpose* of certain of their works. Lotze, after having traversed much of the broad domain of philosophy in his *Metaphysics*, *Pathology*, and *Physiology*, and having attained to great ripeness of scholarship, proceeded to the writing of *Microcosmus*. He modestly calls it an "attempt at an anthropology which should seek to investigate and ascertain the entire significance of human existence from the combined consideration of the phenomena of individual life and of the history of the civilization of our race." And I am quite sure that those who have read it will agree with me that the attempt, though so far-reaching, was at least measurably successful. Ulrici, in his work *Gott und der Mensch*, declares an equally sublime purpose, and accomplishes it with equal vigor and success.

But it is not possible to give here any adequate view of man's achievements in mental and moral science, and those who desire to traverse its entire domain should carefully study some one of the many excellent histories of philosophy. Perhaps the most available is Ueberweg's, in two volumes, the first being devoted to ancient and mediæval philosophy, and the second to modern philosophy. There may be others as good, but this is my choice—influenced, perhaps, by that prevailing tendency of human nature which leads to the recommendation of whatever tools the user happens to own, or know most about.

Whoever will carefully read these "meaty" volumes will rise from their perusal with such a conception of the breadth and depth of human knowledge, with such a profound conviction of the almost infinite grasp of the human intellect, and, withal, with such a sense of man's ultimate dependence upon an Infinite Mind, as he never before had. No matter how deep may have been his previous study of individual philosophers, either of ancient or modern times, such study will only broaden his conception of the vast wealth of thought, as it lies revealed in such a comprehensive survey of the field as a whole. He will become still more inclined to sympathize with, if he does not agree with, Hamilton, that "mental philosophy comprehends all the sublimest objects of our theoretical and moral interest, that every (natural) conclusion concerning God, the soul, the present worth and the

future destiny of man, is exclusively deduced from the philosophy of mind."

There are many other departments of human effort in which man's deeds reveal the divinity of his nature. Indeed, it may seem to my readers that I have omitted from our rapid survey precisely those achievements to which a Christian minister would naturally turn first: the triumphs of the Gospel of Christ; the measure to which the Master's injunction to "disciple all nations" has been obeyed; the unprecedented activity of the Christian Church at the present day; the wonderful development of humanitarian schemes under the influence of vital piety; the multiplication of asylums, and hospitals, and "homes;" the enactment of just laws; the settlement of international differences by arbitration; the moral victories over the tyranny of intoxication—that arch-fiend of modern civilization—and many others. But these have been omitted with a purpose. If, without their consideration, we have had our thought fully occupied, and have been deeply impressed with the divine element in human deeds, how overwhelming must be that impression when the whole is considered! Let the reader add to the few cursory glimpses afforded in this chapter a complete view of man's achievements, and he will, doubtless, gladly admit that man is a co-worker with God, "thinking God's thoughts after him," and putting those thoughts into monumental deeds.

"Man has wondrous impulses toward futurity, which betoken his destiny to another clime. In earnest communion with ourselves we become conscious of our own eternity."—*Alger.*

"The Pagan kissing, for the step of Pan,
The wild goat's hoof-print on the loamy down,
Exceeds our modern thinker, who turns back
The strata, granite, limestone, coal and clay—
Concluding coldly with, 'Here's law! Where's God?'"

—*Browning.*

"The thoughts, the aspirations, and all the energies of immortal beings, ought, assuredly, to bear the impress of immortality."—*Styles.*

"Virtue alone stays by him at the tomb
And bears him through the dreary, trackless gloom."

—*Code of Manu.*

"I am the resurrection and the life."—*Christ.*

"Man's best powers point him Godward.—*Spurgeon.*"

"Here all our countless actions touch the strings
That send a thrill throughout infinity,
On earth our erring fingers strike the keys
That shall resound in endless cadences
Of harmony or discord evermore."—*Taylor.*

CHAPTER VII.

IN HIS ASPIRATIONS.

Water cannot rise higher than its source. A man's ideal may be safely taken as a just measure of himself. Thus may national ideals measure nations, and race ideals the human race. Out of the heart are the "issues of life." Desires reveal the heart as actions *do* not and *can* not. Man's environment from childhood to old age restrains some and hinders others. Circumstances give to the outer life an element of untrueness.

The study of desires is beset with special difficulties because no man can actually look into another man's heart. Still, we may always depend upon certain great *trends* in human nature, even as in geology, no matter how irregularly some faculties may be *tilted*, or how greatly they may be *displaced* in certain souls. If, then, it shall be shown that there are in the human soul aspirations which rise above all mere animal desires and passions, above all that is of the earth, such showing will reveal a source above any thing that is earthly. If, in addition, it shall be shown that there are also aspirations which rise above all that man has ever achieved, and even above that which

is known to be the utmost limit of possibility in this life, such showing will constitute a clearer revelation of his God-likeness than we have been able to find even in his vast achievements.

ASPIRATIONS AFTER KNOWLEDGE.

Mind is never satisfied with present attainments. It is ever reaching out, grasping after what lies just beyond. The larger its present grasp the more eager its outreachings after more.

This has been characteristic of all men, both ancient and modern, of whom we have any knowledge. The language of N. P. Willis's dying alchemist is the language of every aroused soul:

> "I would *know* something here!
> Break for me but one seal that is unbroken!
> Speak for me but one word that is unspoken!"

Then, after the "one seal" is broken, others still unbroken are revealed, and the soul-thirst, quenchless as the immortality which gives it birth, is only increased by what promised to satisfy. I am speaking now of the soul's longings after truth for truth's own sake. The strictly utilitarian search after knowledge is a sort of selfish search; and, of necessity, a groping, partially blinded search. Even in those branches of science which have most to do with the commercial phases of life, the investigators who have made the greatest advancement have been men in

love with their respective departments, rather than in love with the gold which should come from success. The gates of neither earthly nor heavenly knowledge swing wide at the mercenary's approach. This is a sufficient answer to those who say that man's thirst for knowledge is, after all, only a craving to gratify his animal desires.

All history teaches us that mind-hunger is of the very essence of man's being.

In the early ages men, eager to know the truth concerning the jeweled canopy swung out each night above their heads, summoned all their skill to construct instruments which should afford them a fuller view.

In the present age man, standing in full view of worlds whose light has been thousands of years in reaching our earth, and chemically analyzing them, still sighs to catch glimpses of the vaster worlds which he believes to lie yet out of sight, and declares that he is only just across the threshold of astronomical discovery.

The same eager search, and the same increasing desire to know, are seen in the microscopic world. Having perfected his instruments to such an extent as to be able to distinguish infusorial animals, millions of which make up a bulk no larger than a grain of sand, he is now studying their anatomy, and endeavoring to ascertain the methods of their life-processes.

Having obtained such a mastery over the elements that, were it possible for the foremost man of science of Bacon's time to step into a modern city of the present day, with no information having been obtained beyond that with which he left the world two hundred years ago, he would listen with amazement to the clicking of our telegraph instruments and the conversation through our telephones, and be utterly bewildered with the sight of our snorting locomotives, our invisibly propelled street-cars, our electric lights, our sidereal photographs, our solar spectra, and a thousand other marvels; and yet, no doubt, he would soon unite with his nineteenth-century brothers in seeking after some new truth.

It is this eager desire for knowledge that has given us all these advantages, and lifted man so far above the obstacles which once impeded his progress. Perhaps the fact above all others which marks this thirst for knowledge as God-implanted is, that age or bodily affliction does not diminish it.

All mere animal desires decay with the wasting physical strength. Not so the soul's aspirations after knowledge. These not only do not decay, but continue to increase with the multiplying years; so that, as long as reason holds her seat, the aged student continues his researches with the utmost zeal. The eye may grow dim, and the ear dull of hearing, but the fires of soul-desire burn more brightly than ever, and the marvelous harmonies of nature's unfolding proc-

esses sound more divinely sweet than in his earlier years.

Confirmations of the truth of these statements are every-where to be found. Eminent scientists bending over their experiments after "second sight" has come to the long-used eyes, or climbing the observatory stairs on a winter night with enfeebled step, or pushing on into the heart of an unexplored continent with the last remaining physical strength, and profound scholars of more than "three-score and ten" continuing to give to the world philosophical treatises full of freshness and far-reaching suggestiveness—all concur in declaring that the desire for knowledge is not earth-born.

This unwasting desire for knowledge is also a revelation of God in man, because it points to immortality. The whole universe teaches us that for every real want a supply is somewhere provided. This is peculiarly manifest in the functions of the bodily organs of both man and the lower orders. Light for the eye, sound for the ear, food for the palate—every provision complete! every legitimate desire gratified! How, then, can we conceive of a God so inconsistent as to have made such perfect provision for mere animal desires, and to have left the greater desires of the mind to be forever unsatisfied?

Why these high ideals in man? Why the insatiable desire for perfection? Whence came they, if not from a Source higher than himself? And were they

given merely to mock him? All nature forbids the thought! Reason says, "No! a thousand times *no!*" The following words of Addison are a good illustration of this ardent desire for knowledge, and belief in eternal progression:

"There is not, in my opinion, a more pleasing and triumphant consideration in religion than this of the perpetual progress which the soul makes toward the perfection of its nature, without ever arriving at a period in it. To look upon the soul as going on from strength to strength; to consider that she is to shine forever with new accessions of glory, and brighten to all eternity, that she will be still adding virtue to virtue, and knowledge to knowledge, carries in it something wonderfully agreeable to that ambition which is natural to the mind of man. With what astonishment and veneration may we look into our own souls, where there are such hidden stores of virtue and knowledge, such inexhaustible sources of perfection!" *

Many other aspirations of the human soul clearly reveal our supernatural origin and destiny, particularly the desire for power and the desire for enduring fame. These should all receive extended notice, but I have already so nearly reached the limits prescribed for this volume that they must be entirely omitted, and the remaining pages of this chapter be devoted to a brief consideration of

* *Spectator*, vol. ii.

Aspirations after Immortality.

The objector may here affirm that man's desire for immortality is the result of religious teachings, instead of an inborn principle, and hence does not afford any argument for his likeness to the Divine.

Although this objection is entirely futile, it has been so persistently urged that it becomes necessary to show that this desire for immortality is *not* the result of Christian education, but is inherent in the human soul. For this purpose I invite attention to the expressed desires, beliefs, or creeds of a few of the unchristianized nations of the earth. In all of them there are found marked indications of this desire for immortality; abundant proofs that, as Lessing says, "There was a religion ere there was a Bible," or that, as Sir William Jones says, "Divine dogmas run like silver threadings through the systems of the most ancient nations."

If we take up any one of the many excellent treatises upon the ancient religions of the world, or upon the conditions of the early races of men, that which strikes us most forcibly is the uniform belief in some higher Power. This belief is expressed in various ways, but it is found to exist universally. Their funeral rites and forms of worship, wherever investigated, indicate also a belief in some sort of future existence.

The stoical Greenlander places his dog beside his child in the snow-covered grave, believing that the dog will lead the lost one safely over all the upper ice-fields into the warm and sunny realms of the spirit-land.

The American Indians bury the arrows, hunting-knives, and other implements of the chase with their dead, that they may be ready for use in the Happy Hunting Grounds. They see the smile of the Great Spirit in the sunshine, and hear the voice of the evil spirit in the storm. Search where you will, from the ice-bound regions of Labrador to the sunny plains of Mexico and Central America—every-where will be found abundant evidences of belief in God and a hereafter.

Sacrifice for sin has been common through all these regions, and even human blood has freely flowed among the aborigines of these lands. Groping after God, the Unknown God, these rude natures have hesitated not to sacrifice even their own kindred to appease his wrath, and to mutilate their own bodies to atone for sin. The instinct of immortality, implanted within all hearts, proves stronger than every tie of kinship and every bodily desire. What though their notions of God were crude, and their ideal heaven somewhat sensual? We can see in even these imperfect notions and earthly ideals a cheering advance upon their present surroundings and worship. The man who can read the story of the seun-

civilized children of the forest without having his soul glow with sympathetic fire over their ardent expectations of future bliss must indeed be possessed of a strangely lethargic nature. Many of the most fascinating pages of American history owe their charm to this cause, and many of the finest passages in the writings of our most treasured American poets have these heart-longings of rude peoples for their central thought.

What multitudes of hearts have throbbed responsive to Longfellow's implied belief,

> "That in even savage bosoms
> There are longings, yearnings, strivings
> For the good they comprehend not;
> That the feeble hands and helpless,
> Groping blindly in the darkness,
> Touch God's right hand in that darkness
> And are lifted up and strengthened."

Schoolcraft, who literally lived with the Indians, and so writes from intimate personal knowledge, says: "The idea of immortality among the Mexican Indians is thoroughly dwelt upon. It is not spoken of as a mere supposition, or a mere belief not fixed. It is regarded as an actuality, as something known and approved by the judgment of the native. During the long period of my travels and residence in the Indian country, I never knew or heard of an individual who did not believe in it, and the appearance of the body in a future state. No small part of their

entire mythology, and the belief that sustains man in his vicissitudes, arise from the anticipation of enjoyment in a future life after the soul has left the body."

Recent explorations in the interior of the Dark Continent have added new confirmation to the theory of a universal belief in immortality inherent in man's nature. Many of the tribes which have been discovered are in a state of absolute barbarism, and some of them are in a condition too degraded to permit of detailed description; and yet we are informed, by the same men who tell us of their utter degradation, that among even the lowest of them there exists a firm belief in a life beyond. Their former chiefs are simply "gone away," or "are taking a long sleep." All of them expect to ultimately gain everlasting joy, or be plunged into endless misery.

Here, surely, in these recent explorations, we have sufficient evidence of the God-implanted desire to live after death. No matter how debased and polluted the image has become, it is the *image* still.

If we look into antiquity we find the same belief or race instinct every-where manifest. The volumes bearing upon this subject are peculiarly rich and full of interest, and all that it has been my privilege to read bear testimony to this universal desire. Some of these are opposed to revealed religion, and others are professedly neutral, while most of them favor Christianity; hence, we may safely conclude that if there be

any thing on which they substantially agree that element must be so evident that it could be neither mistaken nor ignored.

I would gladly give quotations, did space permit, fully substantiating the above statement, that all do agree in according to every nation or people of whom they write a belief in life after the present existence, but must refer the reader to the originals.

I am convinced that every careful student of this department of truth will come to the conclusion that this universal desire for immortality is one of the golden chains, tarnished though it be in so many places, of which Mrs. Browning speaks in that beautiful couplet:

> "The whole round earth is every way
> Bound by gold chains about the feet of God."

Let us first glance at China. Here, if anywhere, we may look upon men entirely removed from Jewish influences. Here, if anywhere, we may observe the native workings of the human mind, and examine creeds which were formulated without the influence of the Israelite's Bible. What does such examination reveal? An eager longing after immortality, and constant indications of fullest belief in life beyond the grave; hearts, burdened with the same anxious inquiries as ours, voicing themselves in the same passionate emotions; souls apparently listening with expectant eagerness to hear some voice out of the skies say, "Come unto me."

It is not our province here to inquire whether or not they listened in vain. The fact of the yearning and the listening, whatever its outcome, reveals the image in even those darkened souls. Behold them standing at the graves of their departed ancestors, once a year at least, to offer them devout worship, and to leave a generous supply of food for the hungry spirits! The more ignorant classes believe that the departed spirits actually consume the food left for them, but the learned consider it only as symbolical, and teach "that we ought to keep the dead before our eyes and honor them as if they were still living." Every-where it is taught that a man's welfare, for this world and the next, depends upon a faithful discharge of this sacred duty to departed ancestors.

This every-where recognized belief is sufficient, but if more proof be desired it may be seen in the thousands of temples dedicated to their gods, at whose shrines millions of devout worshipers offer vows and sacrifice. Every prostrate form and every upturned face, even of the stoical Chinaman, is a constant witness of the quenchless thirst for eternal life which exists in every soul.

Turning our attention to Persia, we see a very different sort of worship. Instead of the stoical rites and ceremonies of China, every thing partakes of the life-giving characteristics of the central ideal. They are commonly known as fire-worshipers. This, however, scarcely affords a true index to the character of their

devotions. I am not inclined to offer any apology for the barbarous rites and the revolting butcheries of the Persian system, but simply wish to call attention to the fact that even in *this* system may be seen the hand of God endeavoring to lead men up to himself, the faint glimmerings of that Light which "lighteth every man that cometh into the world." The student of Persian creeds and customs cannot fail to find many plain indications, not only of an eager desire for immortality, but also of a belief in the resurrection of the body. Some authorities tell us that nowhere in any of their books can any expression of this belief be found, but such statements seem to me entirely unwarranted. All through the later Persian writings we find references to a Deliverer, a hero-prophet—Sosiosh the Benefactor. With bursting hearts these eager disciples of the ancient Zoroaster were crying out after God, and making every possible effort to somehow get into existence a Son of God.

Among other references in the Vendidad we find the following: "Zarathustra gave warning to Agra-mainyus (and said): 'Base Agra-mainyus! I will smite the creation, which is fashioned by the *devs*. I will smite the *Nasus*, whom the *devs* have fashioned. I will smite the *Pari* whom men worship, until Sosiosh the Victorious is born out of the water Kańsaŏya, from the eastern clime, from the eastern climes.'"

It is immaterial to our argument how the controversy respecting the source whence this thought of a

Mediator sprang, is ultimately settled; for, whether it was purely original, or incorporated into their sacred writings from some outside source, the fact of its presence indicates the inherent aspiration after God, shows the stretched-out arm endeavoring to lay hold upon a Deliverer.

If we take under consideration the religions of India, we are, at the outset, deeply impressed with their gloomy, despairing nature. There seems to rest upon every thing the dark pall of what, to the mind of a Christian, amounts to annihilation; namely, absorption into the Eternal. We read in their sacred books that "the soul is an inseparable portion of the great universal mind—in other words, of Brahma. But further investigation reveals the fact that this so-called "philosophy of despair" has not, at any period in their history, crushed out the inborn desire for immortality. This very absorption is to these darkened minds a pledge of eternal existence.

Although the general trend of their teachings would lead us to conclude that they expect nothing but the final union with, or absorption into, the being of their God, we find many indications of a different belief. The hearts of men cannot be satisfied with annihilation of any sort, however exalted its character. The soul craves *separate* existence. Among their prayers is found the following: "O Vishnu! we do not wish for absorption, but for a state of happiness in which we shall forever see and serve thee as our lord; in

which thou wilt continue as our beloved master, and we as thy servants."

Christian missionaries of all denominations declare that they every-where find the hearts of these dusky millions ready to respond to the story of a Redeemer and a life of future blessedness. No matter how degraded their moral condition, the soul-thirst for eternal life remains. The widow lies down upon the funeral pile alongside of her husband's lifeless form, not having any clear conceptions of a hereafter, but there is much in voice and manner which tells of a fond expectation of reunion in the limitless beyond.

The sacred waters of the Ganges close over a beloved child, and the mother, standing in agony upon the bank, eagerly watching to catch one more glimpse of the precious form, is heard to pray that she may meet the saved spirit beyond the sacred flood.

These brief notices of a few of the prominent nations of remote antiquity must suffice. Egyptian history, if examined, would be found teeming with similar evidences. Remains of ancient art in every nation, and of almost every description, from the rude memorial mounds of the half-civilized tribes of the north to the imposing monuments of Egypt and Persia, attest the desire for immortality.

If we look into the writings of the classic pagans of Greece and Rome, we see the same desire and belief stated in various ways. They had not the teach-

ings of the Bible to influence them, but the "law written in their hearts" constantly asserted itself.

We see what Leighton so beautifully expresses, that "the human soul thirsts after a good invisible, immaterial, and immortal, to the enjoyment whereof the ministry of a body is so far from being absolutely necessary that it feels itself shut up and confined by that to which it is now united as by a partition wall, and groans under the pressure of it."

Cato voiced the indescribable longings of his great soul as follows:

> "Whence this pleasing hope, this fond desire,
> This longing after immortality?
> Whence this secret dread and inward horror
> Of falling into nought? Why shrinks the soul
> Back on herself, and startles at destruction?
> 'Tis the divinity that stirs within us:
> 'Tis Heaven itself that points out an hereafter,
> And intimates eternity to man."

Scipio says: "Do you think that I should ever have undergone so many labors, day and night, in the senate and the field, if my glory were to terminate with my life? Would it not have been much better to have spent my days, without labor or contention, in indolence and tranquillity? But my soul, lifting herself up I know not how, is always looking forward to posterity as if, when she shall have departed from the body, she will then at length be but beginning to live. But unless the case be that our souls are destined to immortality, not that of any person, however

excellent, would thus exert itself for the sake of immortal glory." All through even so ancient a poet as Homer are found distinct references to the existence of the soul after the death of the body, indicating not only the belief of the poet himself, but also that of the masses to whom he repeated his stirring lines. In one place his hero, Achilles, is mourning over the death of Patroclus, but comforts himself as follows:

> "'Tis true, 'tis certain; man, though dead, retains
> Part of himself: th' immortal mind remains."

If we follow the history of Greek poetry and philosophy, from Homer right on to the time when Paul stood on Mars' Hill, we find the same prevalent belief in immortality. No Christian student of Grecian history can fail to come into a kind of loving sympathy with such great souls as those of Socrates, Plato, Aristotle, Pythagoras, Thales, and others, in their honest, whole-souled search after God and truth. He finds many a darkened, sin-stained page; but even here he reads between the lines and learns of a nameless yearning after soul-life. Conscious of a spirit within, which cannot die, and conscious of inward discord, looking forward to a day of judgment with unquestioning certainty, they desired some means of reconciliation. Shall we censure them, and call them hard names, because they personified the unknown God in various material shapes, and became the grossest idolaters? Shall we not rather conclude that

every imagined deity, in grove, or street, or temple — that every idol, wherever found, was only an honest attempt to give substance to a belief born of the God-given desire to gain favor with heaven, and live forever in peace? But it is not possible to further consider the belief of these ancient nations.

I think we would be warranted in concluding, even from this brief review, that the desire for immortality is inborn, and exists in every human soul. This is further and more distinctly shown in its wonderful development under the influence of Christianity.

If this desire is God-implanted, we should naturally expect that communion with God would greatly strengthen it. This is found to be the case. We have been considering the longings of darkened minds after immortality, and the gropings of pagan souls after an unknown God. Even among these there has been found a prevailing faith in a hereafter. But how much brighter shines this faith under the teachings of Christ!

Cato's poetic soul speaks earnestly of God and immortality, but how much nearer to realization seems the longing expressed in the following, by Bernard of Cluny:

"O sweet and blessed country,
The home of God's elect!
O sweet and blessed country
That eager hearts expect!

Jesus, in mercy bring us
To that dear land of rest;
Who art, with God the Father,
And Spirit, ever blest."

How much fuller the God-consciousness in the beautiful lines of Faber:

"O how I fear thee, living God,
With deepest, tenderest fears,
And worship thee with trembling hope,
And penitential tears.

"Yet I may love thee too, O Lord,
Almighty as thou art,
For thou hast stooped to ask of me
The love of my poor heart."

Socrates discoursed calmly, and in some respects beautifully, of the hereafter; but oftentimes even a child, enjoying the Christian's assurance, manifests an equal degree of composure. Scipio speaks of his soul "lifting herself up," he "knows not how," but "always looking forward;" and this same God-implanted, heavenward look, under the influence of the Christian religion, becomes, "I press toward the mark for the prize of the high calling of God in Christ Jesus."

"O blessed day," said the ancient teacher, "when I shall arrive at the divine assembly of souls!" and we accept the outburst of that pagan heart as a sure proof of immortality, but are glad that the same

becomes, by the Gospel's power, "I am sweeping through the gates, washed in the blood of the Lamb."

Every-where throughout Christendom, among all classes in society, and among all ages, is found this upward look of the soul, and the more fully the life conforms to the precepts of the Bible the more eager becomes the gaze. From thousands of Christian churches, and from millions of home altars arises the voice of praise and thanksgiving; while other millions are listening to catch the last lingering echoes of voices they confidently expect to hear again in the land of eternal joy, as through their tears they look with full assurance beyond the grave.

Millions are enduring, with calm and uncomplaining resignation, the crushing care and toil of daily life, in the midst of the most afflictive circumstances, constantly cheered by the bright visions of the painless land beyond the reach of earth's woe.

With these facts before us, and with the conceptions of God which we are supposed to have already formed, is it not possible to obtain a little closer view of the Image? Is it even thinkable that the Bestower of so many blessings upon the brute creation, affording satisfaction to every desire, would deal less generously with man? Is it thinkable that he would provide such a marvelous earthly temple for the human soul, and place within that soul longings which grow stronger, and hopes which become more real, the nearer to perfect obedience comes the daily life,

simply to disappoint that soul at the last. No! a thousand times no! All life's precious experiences take hold upon experiences beyond. Every God-implanted longing shall find a God-given supply. "*Veræ amicitiæ sempiternæ sunt.*"

The same reasoning which applies to the assurance of a gratification of man's desire for immortality holds good with reference to all other God-implanted aspirations. The soul shall ever expand. The devout mind responds fully to the sentiment of the learned Creech: "There is not a more pleasing and triumphant consideration in religion than this—the perpetual progress which the soul makes toward the perfection of its nature; that the soul shall go on from strength to strength, and shine forever with new accessions of glory, and brighten to all eternity; that she will be still adding virtue to virtue, and knowledge to knowledge."

Channing says: "The truth is that all action on earth, even the intensest, is but the sport of childhood compared with the energy and activity of that higher life. It must be so. For what principles are so active as *intellect*, *benevolence*, the love of truth, the thirst for perfection, sympathy with the suffering, and devotion to God's purposes? And these are the ever-expanding principles of the future life."

This look at the upturned face of man is full of interest, but we cannot continue it longer. It is a revelation which each reader clearly discerns as he

looks into his own soul. No person with heart silent of holy voices will peruse these pages. The infinite longings vary greatly in intensity, but depart not from any.

Over some upturned faces there hangs the thick cloud of agonizing doubt, and yet an Invisible Power draws the soul upward.

It must be that the sun is above the cloud. God grant that every reader may be enabled to see, with clearest vision, the Way, the Truth, and the Life, and come ultimately to the full fruition of every God-implanted desire!

"Who will describe a soul struggling for eternal life, or paint the movements of the Holy Ghost creating an immortal soul anew, baptizing it into God and heaven?"—*Brooks.*

"That which is born of the flesh is flesh; and that which is born of the Spirit is spirit. Marvel not that I said unto thee, Ye must be born again."—*Christ.*

"So far as a page of limping words can compass the mighty theme, I essay the hopeless task of portraying the glory of the indwelling Christ."—*Steele.*

"Men who lead holy lives do, by so living, carry greater conviction to the hearts of the world than if they wrought miracles."—*Deems.*

"Thy sinless mind in me reveal;
Thy Spirit's plenitude impart;
And all my spotless life shall tell
The abundance of a loving heart."

—*Charles Wesley.*

"The path of the just is as the shining light, that shineth more and more unto the perfect day."—*Solomon.*

CHAPTER VIII.

IN HIS REGENERATION AND ADOPTION.

If the reader has followed me from the beginning, with an unbiased mind, I think there can be no reasonable doubt remaining as to the reality of the revelation, and he has ere this accepted the fact, and, intellectually at least, yields himself to conviction.

To him there remains a still clearer view. It has been left for the close because, to the unbeliever who *will* not be convinced, to the atheist who stubbornly refuses to acknowledge God, and to the agnostic who *as* stubbornly contends for his absolute ignorance of God, this department of evidence has no weight, and can, therefore, be of no interest. Hence, should there be one of any of these classes who has followed me thus far, and remains still of the same opinion as at the beginning, I say to him, Spare yourself the further perusal of this book.

But to all into whose minds there comes the consciousness of a God, to all in whose hearts there is any response to God's teachings, as seen in the human organism, and in human history, what remains will come with added force. It may be termed the regenerating power of grace, and the abiding presence of the Comforter. It is the revelation of God in con-

version, and in the Christ-likeness of Christian character.

Life from antecedent life is a fundamental law of nature. Spontaneous generation is proven to be a myth as regards the physical world. The same law holds good in the spiritual realm. Eternal life can proceed from no lower source than itself. It *does* come into human hearts. The coming does, then, manifest forth an eternal God, the author of eternal life. Every conversion is a new demonstration of supernatural power. Men cavil at the records of Scripture miracles, and ask why there are none at the present day, while all around them are constantly occurring those that are as genuine as any ever wrought by Christ's own hand. "Whether is it easier to say to the sick of the palsy, Thy sins be forgiven thee; or to say, Arise, and take up thy bed, and walk?"

If the healing of a poor paralyzed body is a great work, the quickening of a sin-palsied soul is a greater. If to open blind eyes requires supernatural power, certainly nothing less will cause the scales of sin to fall off. Nor have the displays of divine power in conversion grown less in the past eighteen hundred years. The same transforming power which made a flaming herald of the cross out of vacillating, blasphemous Peter, and sent Saul, the arch persecutor of the early Christians, to bind up the wounds he had himself inflicted, and establish Christianity in

the regions beyond, is still to be seen doing its miraculous work.

A prominent business man, an avowed sceptic, who for many years had improved every convenient opportunity to cast slurs upon religion, declaring that all Christians were either dupes or hypocrites, was led by the devoted character of a young child to think seriously upon the subject of personal religoin; and then, under the appeals of Christ's ambassador, was induced to come with streaming eyes to the mercy-seat, and cry aloud for pardon. Pardon was found, the whole nature changed, the scoffer transformed into an ardent friend, and the hard-faced infidel into a loving-hearted, happy-faced worshiper.

Another, with hot, impulsive nature like Peter's, who, to violent language against Christianity, was wont to add violent actions against Christians, rushed with all the frenzy of hate into the church, and down the aisle to the altar, for the purpose of dragging his penitent wife away from what was to him a loathsome, degraded place, but was seized by the Spirit's power, and before he left the room began crying out for mercy. For several years thereafter his shrill voice shouted God's praises, and his streaming eyes spoke of the indwelling Christ; and I believe they are still thus employed.

Another, who was lower than the brutes, because she had sunken almost into perdition—into a state out of which few women ever rise—felt the touch of

a loving hand, and was lifted out of her degradation into a new life and new society, even the household of faith, and stands to-day a bright example of Christ's power to save and cleanse. These are but a few out of many miraculous transformations which the writer has witnessed. They are occurring everywhere throughout the field of Christian effort.

While these pages are being written, there comes up from all directions the news of deliverance from sin. Thousands are singing the "new song" who a few months ago were cursing God and desecrating his law. Is not this a revelation of the same divine power working in men which was displayed at Pentecost?

What matters it whether three thousand souls catch the holy fire at one altar or three souls at every one of a thousand different altars! God is one, and all souls are his.

ADOPTION.

In the Abiding Presence, God is still further revealed, and much more fully.

For four thousand years men were feeling after God, and were listening to his voice, as "at sundry times and in divers manners he spake unto our fathers by the prophets," and many found him; but the great mass of humanity stumbled on in the darkness, seeking rest but finding none, until the "*Word* was made flesh and dwelt among us, and we beheld his glory." This incarnate revelation could not re-

main within a single earthly form, and in due time passed again into the heavens, but sent in his stead the Abiding Presence, the Comforter, the Holy Spirit, to be an indwelling witness in every consecrated heart.

Every Christian becomes a new incarnation. "I and my Father are one," said Christ. Christ was God in the flesh. According to his promise, Christ comes into the believer's heart and abides there. He is Immanuel, and we are living epistles, known and read of all men. Just as the greatest miracle of Christianity is Christ, and the fullest and most complete vindication of Christ is his blameless life of unparalleled charity, so the clearest, most satisfactory and world-convincing revelation of the divinity of our religion is the life and character of Christ shining out of our lives, a light to lighten the world, a force to bring to naught the entire army of unbelief, a soul-cheering warmth to melt away all the icebergs of so-called rationalism, and bring the multitudes into loving contact with the great Heart.

Other evidence may convince the intellect—a work of great importance—but this does more. It convinces both head and heart. It appeals to the whole man. He sees Christ in the life, and cannot refuse to believe the testimony of his own senses. The chief difficulty with unbelievers is that they look at unworthy Christians and measure Christianity by them. It is difficult to conceive of men being guilty of such

folly, and we *could* not were not the evidence so constantly before our eyes. As well might we argue that there were no thrifty, well-formed trees in the forest because there are so many deformed ones.

If we but turn our eyes away from the abnormal we shall find abundant examples of the normal. If there be but one man in whom Christ can be seen as a living presence, that one man is sufficient to prove the divinity of the Christian religion. Who is there that has not implicit confidence in the genuineness of some *one* person's piety? Who that has not observed the permanent transformation of character under the influence of the Spirit's presence? Certainly no one who has come into contact with men to any considerable extent.

I am aware that unbelievers are wont to discount the displays of divine grace seen in conversion, because so many who profess conversion fall back into their old ways; but for every one who thus falls, after what seemed a clear and positive regeneration, dozens, or even scores, go on to know the Lord more perfectly, and die rejoicing in the assurance of acceptance with God. This fact ought to be sufficient to convince any unprejudiced mind.

As before suggested, it is quite manifest that too often the objector is inclined to search for the false-hearted professor, whom he himself stigmatizes as "no Christian," and then point him out as an example of Christianity's power. Of the same character

is much of the criticism which is heaped upon the doctrine of scriptural holiness. Because some of those who most loudly profess sanctification are the least worthy of confidence, and the greatest mischief-makers in the Church, men in general are quite inclined to aim thrusts at the doctrine, by holding up these spiritually proud boasters in our Israel as examples of the "holy rest of faith," forgetting, or persistently overlooking, the greater numbers who exhibit, by a well-ordered life and a godly conversation, the fullest indwelling of the Comforter, and are accepted of all men as living witnesses to the complete cleansing power of the shed blood. This Abiding Presence is the glad possession of sufficient numbers to prove its possibility for all, and constitute it the final and incontrovertible revelation of God in man—a revelation by and through the Spirit, a revelation which makes man a conscious possessor of God the Father, Son, and Holy Ghost.

This possession is constantly shown by its fruits, coming out in the life—a life of love to all men, of joy in Christian service and sacrifice for God and humanity, and peace which flows ever onward with deep and steady gulf-stream current, undisturbed by the alternating storms and calms of our earthly environment. To a life of spotless purity and benevolence is added a full and free declaration of the inmost soul. He "rejoices evermore, prays without ceasing, and in every thing gives thanks."

This final and sublimest revelation of God in man must find voice, must express itself in words as well as deeds. "Even as the Word was made flesh and dwelt among us," so that "we beheld his glory, the glory as of the only begotten of the Father, full of grace and truth," so this Word, dwelling richly in human souls by the Spirit, burns its way up through the whole being and touches the tongue as with a live coal from off God's altar, setting it to declaring, in one way or another,

> "Every thought, design, and word,
> Burns with love to thee, my Lord;
> Body, soul, and spirit joined
> All in love to thee combined."

And at the same time there will exist no feeling of self-satisfaction, or spiritual pride; for out of the same soul will come,

> "More and more of love I claim,
> Glowing still with quenchless flame;
> All my heart to thee aspires,
> Yearns with infinite desires."

This is that "spirit of adoption, whereby we cry, Abba, Father. The Spirit himself beareth witness with our spirit, that we are the children of God."

THE END.

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